

The GENTLEMAN and LADY's
Military PALLADIUM,

For the Year of our LORD, 1759. 3

CONTAINING,

A PLAN of the *Military ART*, according to modern IMPROVEMENT; relating to several *Branches* of the SERVICE. Most humbly dedicated to HIS EXCELLENCY *Marshal Lord Viscount LIGONIER*.

A ROYAL CHRONOLOGER and EPHEMERIS. An Account of the Expected COMET; and the ELEMENTS of the COMET of 1743, by the Reverend Mr. Bolton. New *Astronomical TABLES*, with EXAMPLES of the Use of the EQUATION-TABLES in former *Palladiums*.

Likewise *Many Things* useful in SCIENCE.

Humbly inscribed to the ROYAL SOCIETY.

The Eleventh Number published. *Aut disce, aut discede.* —

By the late AUTHOR of the LADIES DIARY.



Malle inu et del.

J. H. Müller Sc.

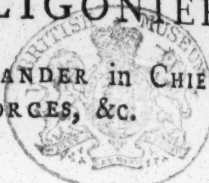
And for the Heaven's wide Circuit, let it speak
 The MAKER's high MAGNIFICENCE; who built
 So spacious, and his Line stretch'd out so far,
 That Man may know he dwells not in his own. MILTON.

Printed for H. WOODGATE and S. BROOKS, in Pater-noster Row.
 MDCCLIX.

To his EXCELLENCY

JOHN, Lord Viscount LIGONIER,

FIELD MARSHAL, and COMMANDER in CHIEF
of all his MAJESTY'S FORCES, &c.



May it please your EXCELLENCY,

As a *Military Treatise* as naturally claims the *Patronage* of a **GENERAL** eminent for every *Military Virtue*, as a dutiful *Subject* claims the *Protection* and *Favour* of his **PRINCE**, I could not, at this *Time*, without being guilty of very great *Impropriety*, address the following **MILITARY PLAN and OBSERVATIONS**, relating to several *Branches of Service*, to any **OTHER** than your **EXCELLENCY**.

I pretend to *no other Merit* therein than that of laying before your **EXCELLENCY**, and the **PUBLIC**, such *Military Materials*, as I have been honoured with from my **SUPERIOR OFFICERS**, of *Fidelity* and *Long Service*. Which *Materials* I have collected, and disposed of, under **DIFFERENT HEADS**, that their *Use*, or *Defects*, may appear the more conspicuous; and which, (*with your LORDSHIP'S Leave and Approbation*) I design to continue publishing, in **DETACHED PIECES**, as I find *Opportunity* and *Encouragement*.

As **EMPIRE**, my **LORD**, has been observed to *rise* and *fall* with the *Improvement* and *Neglect* of *Arms*, (as well as of *Arts and Sciences*) if my *feeble Attempt* should excite an *Emulation* among **GENTLEMEN** of *superior Station* and *Ability* in the **ARMY**, to improve every *Branch* of the **MILITARY SCIENCE**, to its utmost *Exactness* and *Perfection*, I hope the *good Event*, my **LORD**, joined to my *good Intention*, will excuse this *Presumption*.

My *Zeal* has been always *greater* than my *Power* and *Station* to serve my **KING** and **COUNTRY**.

But your **EXCELLENCY** will pardon me for observing how gloriously your **PATRIOTISM** and **LOYALTY** shone at the *Battle of Val* (near *Maastricht*) as even to *eclipse* your other *shining Qualities*, for that *Time*; when you exposed your *Person*, (to the *Hazard* of your *Life*, and certain *Loss* of your *Liberty*) to rescue His **ROYAL HIGHNESS** from the *Hands* of his *Enemies*. Which, with **YOUR ZEAL** for the *Honour* and *Service* of your **COUNTRY**, so readily shewn upon all other *Occasions*, have endeared your *Name* to every *true Briton*.

I could, with *Pleasure*, expatiate on your many *personal Qualities*, for which **GREATNESS** is admired and beloved; but I forbear to mention them, as what may not be so agreeable to your **LORDSHIP**.

Therefore

DEDICATION:

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Therefore it is no Wonder, my LORD, that the *British Troops* have fought with such *Spirit, Conduct, and Resolution*, when inspired by your *Presence*, and influenced by your *EXAMPLE*, at the Head of them.

That your EXCELLENCY may long continue to be the DEFENCE of the BRITISH THRONE, and LIBERTIES of this Nation, the LOVE and DELIGHT of the *Soldiery*, the Glory of the *British Arms*, and the DREAD of his MAJESTY's Enemies! is the sincere and hearty Prayer of

Your EXCELLENCY's

most obedient,

most devoted,

and most humble Servant,

Windsor-Castle, near Rochester,
Kent, July 17, 1758.

ROBERT HEATH.

INTRODUCTION.

MILITARY DISCIPLINE in an *Army* is known to be as conducive to the Success of its Enterprizes, as the due Execution of the *civil Laws* is to the Security of the Rights and Properties of the Subject: *Authority and Obedience* in both are absolutely requisite; without which, neither the ARMY nor a GOVERNMENT could answer the Ends of its Institution, nor even subsist.

Military Discipline consists in all Orders given by SUPERIORS, and in their due Obedience and Execution by INFERIORS, from the GENERAL COMMANDING IN CHIEF to the common Soldier.

How beautiful is Order! What Pleasure does even a REVIEW afford an intelligent Spectator, to behold a Battalion perform their Evolutions, and other Parts of the Field-Exercise, with Alertness, Force, and Dexterity? The Inferior Officers have the Applause of the REVIEWING GENERAL for their Judgment and Diligence in teaching the Soldiers, and They for the expert Performance of the different Parts of their DUTY.

Discipline places a Man in the most beautiful Attitudes, gives him an Air of Ferocity, and nerves his Arm with Vigour. It quickens his Apprehension, makes his Limbs active and agile, and teaches him Duty and Obedience. Courage is but a secondary Quality, which, if not directed by Prudence, nor conformable to

the Rules of *strict Discipline*, is but an *impetuous Heat*, that throws a Man off his Guard, lays him open to the cool Rebukes of his Enemy, and leads him on to his Destruction. But an Army, well regulated by Discipline, and obedient to the Orders of a judicious Commander, generally proves *triumphant*.

A *strict Regard to Military Discipline* has often rendered a *Handful* of Men victorious over a numerous Army. It was by *this Art* that the *petty States* of Greece maintained their Independence when attacked by Armies vastly superior in Number. And to the *Exactness* of the *Military Discipline* the Romans owed their Conquest of the World.

Every Nation round us is so sensible of the Importance of introducing an *exact Discipline* among their Troops, that, for some Years past, they have employed their *utmost Attention* to improve it to the greatest Degree. — And particularly the magnanimous and victorious PRINCE and HERO, his present MAJESTY of PRUSSIA, to whom all European Nations are beholden, for his military Plans and Improvements. The *English* have not been negligent in this Respect, of whom it may be said, to the Honour of our Officers, that the Troops under their Charge, as well Horse as Foot, are now as expert at their Arms, and as alert in every Branch of the *Military Duty*, as the *Best*. And our Enemies will be forced to acknowledge the Power of our Arms.

The Roman Discipline was so rigidly exact, that the least Deviation therefrom was punished with great Severity. *Posthumus*, the Dictator, and *Manlius Torquatus*, the Consul, killed, each of them his own Son, for marching out against a Party of the Enemy without Orders, although they returned *victorious*. This was a *Stretch* of Discipline carried to Extremity, and has been censured by the *Historians* as an Act of Cruelty. And those Generals can only be justified by the *Example* inflicted on their Sons, to stop the Impression that might be made on the Army, by the *Greatness* of the Offenders.

Spirit and *Vivacity* corrected by exact Discipline gives Life to Action, and allows the Enemy no Time for *Stratagems*, and circumventing Arts. This is the *peculiar Character* of the *English*; no national Soldiers, in the World, are better disciplined, and *no* behave more resolute in Time of Engagement with the Enemy.

These Lessons are taught them by their OFFICERS, whose Bravery they imitate, and exert a Courage by their Conduct, for the Glory of their KING and COUNTRY.

A
P L A N
OF THE
MILITARY ART,

According to

MODERN IMPROVEMENT.

Of a General's Command, Intelligence, and Precautions. The Discipline and Oeconomy of an Army. Bread, Forage and Hospitals. Of Harmony. The Rendezvous, Preparation, Orders, and Marching, of Forces. Decamping, Passing the Enemy's Lines. Of Ammunition, Lying within Lines; Advantages to be taken there. Of approaching the Enemy, and observing his Motions. Of Stoppages.

being a Specimen of a TREATISE ON the SUBJECT, designed to be published in DETACHED PIECES,

collected from the AUTHORITIES of SUPERIOR OFFICERS in the Army: Having long served their KING and COUNTRY with Honour.

OF A GENERAL'S COMMAND.

WHEN a GENERAL is appointed to command an ARMY, He is thoroughly acquainted, by his PRINCE, or his Ministers, with their Designs; and likewise, if it is to be a combined Army, or entirely of one Nation. If composed of several Nations, he is made acquainted with the Number and Quality, as also the Ranks of the Generals, before he takes on him the Command, and settles the Operations of the ensuing Campaign; whether it is to be offensive or defensive. He confers with the different Princes, Ministers, or Generals; and, at all Events, ascertain what Part of the Expence each Nation is to bear, that there may be no Delay when they come into the Field. What I mean by this is, what Share each Nation is to find of Cannon, Mortars, Engineers, Pioneers, and all Utensils proper for a SIEGE. Without this agreed on, he knows it will occasion Delays, if not render the Campaign fruitless. And as many Inconveniences have arisen from not having battering Cannon with an Army,

a Number of Troops now never go into the Field without them, unless they were only a *flying Army*.

If the **GENERAL** is unacquainted with the Country, he makes himself *Master* of it by consulting the *Maps*, and reconnoitering it as often as possible, whereby **HE** becomes able to make proper *Dispositions* and take *Advantages* when they offer. He is sure to employ, as his *Quarter-Master-General*, a Man who knows the Country, and is indefatigable. The *Captain* of the *Guides* is a Person that has served in the Country, or that, having travelled through it, knows the Road, has made his Remarks on it, and is a good *Draughts-Man*. The *Lieutenants* of the *Guides* are Persons of the Country, who are chosen for their Knowledge of it, of which the *Quarter-Master-General* and *Captain* of the *Guides* are Judges.

These, being well chosen, are of great Advantage to an Army; because the Army will then be well conducted by them; but, if ill chosen, they are known to give you Fatigue by misleading the *Columns* they are to guide, and, instead of going Six Miles, you will go Twelve.

OF INTELLIGENCE.

AS *Intelligence* is of great Advantage to the Government of a State, so it is known to be the Life of an Army; therefore the **GENERAL** endeavours to find out proper Persons for that Use, and fix *Correspondences* in the Camp, and, if possible, in the Country of his Enemy, for which he spares no Cost.

MONEY is known to be the Sinews of War, and a Key to the Cabinet of Princes. I have been told a Story of a Person who the late **DUKE** of **MARLBOROUGH** employed as a *Spy*, that personated a *German Count*, was a Man of *Address*, and provided with a very fine *Equipage*, Servants, and every Thing answerable to the *Character* he was to assume, and *Money*, the principal Ingredient, was not wanting. He procured a *Recommendation* to some Person of *Quality* in the *French Army*, then set out and remained with it till the *End of the War*. By Means of this Man, the **DUKE** was informed of several Things which he could never have known any other Way. But this Man being once at a Loss, and afraid of being discovered, or else abandoned by the **DUKE**, for Want of *Intelligence*, he therefore suffered himself to be taken Prisoner, in advancing too far upon a *reconnoitering Part*, by which Means he settled his *Correspondence a-new*, and carried it on till the *End of the War*. I only mention this Story as an *Instance* that the **General** leaves no Method untried that can possibly bring him acquainted with the Enemy's *Strength* and *Designs*, and with what Succours he can expect, from whence they come, and how long they will be in coming: the Calculation of *Time* and *Place* making great Part of the **General's** Character. By knowing the *Strength* of his Enemy, he best judges what Ground he must take, in opening the *Campaign*, and, by penetrating into his Enemy's *Designs*

be the easier *frustrates* them; as by his *Motions* the General judges if your *Intelligence* be right.

OF DISCIPLINE.

DISCIPLINE in an Army being like a *Pendulum* to a *Clock*, it sets all going, and keeps the *Machine* in Order. Therefore the GENERAL establishes this Rule, at first, by giving good Orders, and keeping up strictly to them. *With paying well, and punishing when deserved, the Soldier is satisfied.* Strictness, at first setting out, saves many a Man from Punishment. Rewards and Punishments are natural to the human Mind; as by the one we are led on to great and glorious Actions, so by the other, we are deter'd from doing base and mean ones. Therefore, a General having the Power of both, distributes them accordingly, without *hastier Ends*. This Way you have a *brave Army*; and a good and successful one, by his encouraging Religion, and attending divine Service himself, and having it duly performed in Camp: For Nothing is observed to make Men do their Duty so exactly, as believing they please the ALMIGHTY in doing it. *This Opinion* rivetted in their Minds, what will not Men do, *when regulated by Discipline and Order?*

A GENERAL, knowing the Number of his Enemies he has to encounter, and finding himself superior, acts *offensively*; if inferior, *defensively*, by taking Care to cover his own Country, and that of his ALLY, and following and distressing his Enemy; and, by his *Exactness* and *Alertness*, makes Amends for the Inferiority of his Troops.

When HE punishes, he endeavours to make the Offenders sensible that it is not the Man but the Crime he abhors.

OF THE OECONOMY OF AN ARMY.

THE three chief Things of which, are FORAGE, BREAD and HOSPITALS, next to be considered.

In making of *Contracts* for these, great Care is taken to employ Men of *Credit* and *Reputation*; for when a poor Fellow, or a bold Undertaker, happens to be employed, you are in Want of every Thing by his having no Credit in the Country where you are to act. Therefore, Men of *Substance* and *Ability* are generally sought for, who can give Security for the Performance of their *Contracts*. The Army is supplied with Hay, Corn, and Straw in the Garrisons, till it takes the Field; and is also supplied on the Marches to the Place of *Rendezvous*, and Time of opening the Campaign, till the Products of the Earth are fit to be cut; therefore the Undertaker is ordered to erect *Magazines* in such Places as the GENERAL appoints.

OF

OF BREAD.

BREAD being the chief Support of the Army, the greatest Care is taken, in making this Contract, that the Army may be regularly supplied with what is good, and that they have their Quantity and Quality; I mean half Wheat and half Rye; to which End, the Quarter-Masters of each Regiment are very exact in the receiving it, and every Regiment has Weights and Scales; that on the Failure of Weight, the Badness of Composition, or being stale, it may be returned, for the first Complaint. If this happens more than once, and its Quantity deserves Complaint, the Commanding Officer of the Regiment, where this happens, makes a regular Complaint to the General of the Day, that he may examine into it, and have it remedied, or lay'd before the Commander in Chief.

OF FORAGE.

AS great Uneasiness has arose, owing to the Manner of receiving the FORAGE, and Orders for the Payment of it, Care is now taken to have the Forage good, and the Weight of the Ration specified in the public Orders, that if any Tricks are played, the Contractor may be punished. Who is now ordered to deliver no more Rations on private Receipts, but the Quarter-Master of each Regiment, or an Officer of the Regiment, in his Absence gives one general Receipt for the whole which is allowed to that Regiment. By which Means the Accounts are made up exact, and there can be no Confusion. If any Gentleman keeps more Horses than is allowed by his Rank, the Quarter-Master, or Officer, has a discretionary Power to demand more than his Allowance, provided he pays ready Money for the Overplus. And as this Article has been thought a great Hardship, by all the Officers of the English Army, I beg Leave to lay the Case of every Officer, especially that of the Subaltern, before my Countrymen. Each Subaltern is allowed 6d per Day to maintain one Horse for 200 Days, and it is expected he shall keep a Horse for the whole Winter. If he is to pay 4d per Day more than he is allowed to the Contractor, besides what he pays his Servant, or Bow-man, who is to take Care of his Horse, and this out of 3s, or 3s and 6d, per Day, surely the Horse should be maintained by the Government; since the Subaltern is obliged to have one for carrying his Baggage. To go higher; the Captain of a Company is allowed 12 Pence per Day to maintain 2 Horses, one for his own Baggage, and one to carry the Mens Tents; the Captain must pay 1 Shilling and 8 Pence to the Contractor, so that he is to have 8d per Day above what the Government allows. What makes this Usage very hard, is, that he must pay four Pence a Day more than is allowed for the Horse that carries the Mens Tents. It is still harder in the Foot-guards where

every Captain of a Company ranks as *Lieutenant-Colonel*, Duty, as such, in the *Line*, and therefore is obliged to keep his *Equipage* answerable to his Character.

The *Lieutenant-Colonels* have 8 *Rations* allowed them, and the *Lieutenant-Colonels* of the *Guards*, who are Captains by Rank, are allowed but one; by which Means they are rendered, as they pay the *Overplus*, uneasy and unhappy, and really cannot live on their Pay. Whereas, if every *Lieutenant-Colonel* of the *Guards* was allowed 6, and every *Captain* of the *Guards* 3 *Rations*, they could do very well. And now I am speaking of *Captains*, the *Captains* of the marching *Regiments* had 4 *Rations* per *Man* (one being for carrying the *Mens Tents*) every Officer takes *Forage* from the *Magazine*, would then be able to pay the *King's Allowance*, and no more would be expected from him. In this Situation every one would be satisfied. And it appears that a Man who ventures his Life for his Country should be allowed to spend his Fortune, likewise.

OF HOSPITALS.

THE Hospitals require the greatest Care and Attention. The Persons employed therein are the *Physicians* and *Surgeons*, who are Men eminent for their Skill in their Professions, and likewise for their Credit and Humanity; because the Lives of Thousands depend upon their Wisdom and Management. The Choice of all subordinate Officers being made by their Recommendation, therefore, as their Reputation is at Stake, they take Care to chuse good and careful Ones. Who inspect nicely the several *Drugs* and *Medicines* provided for the Use of the several Hospitals; and see likewise that they are good and fit for Use; by which Means many Men's Lives are preserved.

The chief and most useful Officer, among these, is the *DIRECTOR*, who has the principal Management of the *HOUSE*, the ordering the *Furniture*, *Utensils*, *Servants*, *Nurses*, and likewise the *Provisions*, of all Kinds, are under his Direction.

As he allots the Quantity, he therefore takes Care of the Quality, that each *Species* is wholesome and good; and that there is no *Want* in the *House*. That each *Patient* has every Thing ordered. And, as all the Money goes through his Hands,

he is not One in mean Circumstances, who accepts his Office as a Burden, to make Money of; but is a Man of Credit and a conscientious Man; who sees Justice done to the Sick in the strictest manner; and is ambitious to serve his KING and COUNTRY.

Over These, the COMMANDER in CHIEF appoints a General Officer, to be INSPECTOR GENERAL. To Him all Complaints, are sent, and the Officer or Officers who are appointed as Wardens to the Hospital, together with the Director, send their Reports. And as often as HE can, conveniently, he visits the Hospital, and sees that the *Physicians* and *Surgeons* do their Duty. He inspects the *Provisions*, examines the *Accounts*, hears any

Complaints the Patients may have to make, and orders in
Thing he thinks proper for the Good of the Service.

OF HOSPITAL BOOKS.

THE Books of the Hospital are kept very exact; Names of each Man, with the Rank he has, the Regiment he belongs to, the Day he came in, is entered; when any die, the when they die, or recovering, the Day when recovered; and Day of their Dismission, and a Certificate sent with them, if they came from such an Hospital; specifying the Day they were off the Pay of the Hospital.

The Commanding-Officer, at each Hospital, takes Care of Arms, Cloths, and Accoutrements, and Linnen of the Sick in Hospital on which he does Duty. For which End, he may have a Serjeant and Corporal from each BRIGADE, and carry them a Store-house, which he provides, where they are to be laid taken Care of, till the Men recover to whom they belong.

If any Men die, these Things are returned to the Regiment the first Opportunity, or kept in the Store-house till the Army march into Winter-Quarters, and then are delivered. The Serjeant and Corporal are allowed some small Matter for keeping them clean.

HARMONY RECOMMENDED AMONG OFFICERS.

A GENERAL COMMANDING IN CHIEF recommends Friendship and Harmony among the subordinate General-Officers, and selects out of them a Sort of Cabinet, to consult with upon extraordinary Occasions: Does Nothing without Council of War, but all their Opinions, but never gives his own; by which Means he, like the Bee, gathers the Sweets from the finest Flowers, from thence makes the Honey. When HE has formed his Plan, he communicates it to the next in Command to him; but not till the Night before it is to be put in Execution. This Precedent is taken by every General, who commands, for Fear he should be taken off in the Action, or by some random Shot in commanding, and thereby the Army might be worsted for Want of knowing the proper Plan of Operations.

OF THE RENDEZVOUS OF AN ARMY; AND PREPARATION FOR MARCHING.

AS soon as the Season permits, the Army is ordered to march near the Frontiers of the Country, where the General designs to open the Scene of Action, and as near a navigable River as possible, in order to convey with the more Ease, the Forage, Ammunition, Provision, Cannon, and Stores of all Kinds. While he likewise an Eye to the marching of his Troops, that they

not to be *flank'd*, or *intercepted*, in their March to the Place *Rendezvous*.

Therefore the *Quarter-Master-General*, or his *Deputy*, reconnoitre the Country, before the *Rout* is made out. Which Measure is taken, that having certain *Intelligence* of the Situation of the Enemy, you can, this Way, meet with *no Surprise*. In this Camp, Forage is generally taken from Magazines, that the Soldiers may be seasoned, and not fatigued at first; and especially if it is a Friend's Country, when the Army is to assemble, and all Things are ready for that End.

In the *first Camp*, the Seniority of the *Generals*, and their *Rotations*, are fixed, and they are appointed to their *different Commands*; so that every one knows his *Post* in the Day of Action, when the Army is divided into *First* and *Second LINE*, and *Fixes* and *BRIGADES*.

ORDERS FOR MARCHING.

AS soon as this is done, the *GENERAL* orders the Army to march, if to act *offensively*, and the Enemy be inferior, and is in an open Ground, or intrenched to Advantage. Every Thing is prepared for an *Attack*, and the Army marches accordingly; — but if the *General* finds it impracticable, or it will cost him too dear, he suddenly marches *another Rout*, and sits down before some Place of *Consequence*. By this Means he either takes some considerable Place, which encourages his Army, or draws the Enemy out to Battle.

OF MARCHING THE ARMY.

WHEN an Army marches, it is generally by *LINEs*, or *WINGs*. By *Wings*, it makes *four Columns*, and each *Wing*, or *Column*, is commanded by their own *Generals*. If the Design is to attack, you have some *Field-Pieces* at the Head of each Column, and the Columns are kept in Sight of one another. When they pass through an enclosed Country, *small Parties*, commanded by Officers, are kept in the *Front* and *Flank* of each Column, who have strict Orders to examine every *Hedge*, *House*, *Wood*, and *Copse*, before they pass, that if they discover any Thing they may give Notice to the *General* commanding that Wing. When they come into the Campaign Country, *small Parties of Horse* are advanced to scour the Plain, and see if any Parties of the Enemy are nigh, who have Orders to post themselves on *Rising Ground*, that they may be able to discover the *Approach of the Enemy*, which they give immediate Notice. But, finding all quiet, they fall into the *Rear*, as soon as the Army is marched over the Plain, and enter the *Defiles*: For the *Horse* generally makes the *Rear*, in passing through an enclosed Country. If it be only a common March, but among or near the Enemy, the Baggage marches in the *Rear* of each Column, escorted by a Regiment

from each; and the *old Grand Guards* make the Rear of the whole. The *Quarter-Masters*, *Camp-Colour-Men*, *Pioneers*, and some *Engineers*, assemble *two Hours* before the Army marches in order to go before and level the Ways, make Roads, and Bridges, and make *Overtures* for the March of the Column. This last is generally done by the People of the Country, who are ordered to do it by the *Quarter-Master-General*, or his Deputy. And, likewise, to mark the Camp.

The *Artillery* generally keeps the great Road, escorted by one or two Battalions, and a *Party-of-Horse*.

All *Avenues* to Woods are well *reconnoitred*, and likewise Openings to Roads or Villages on your Flanks, and Parties posted at them till the Column is gone past that is nearest to them. Then they have express Orders to fall into the Rear, without any further Orders. For Want of Orders being plain these Parties have been mistaken. You always march as early as you can, especially in Summer; because of the Heats fatiguing your Men, and Horses. You never take Night-Marches, unless to surprise an Enemy, or to steal a March upon them, and then you are sure that your Guides know the Country you are to pass through, who are kept close with the Columns, and the Regiments close to each other, to post strong Detachments on your Flanks, with Pieces of Cannon, if the Enemy can approach you that Way, and you keep your *Design secret*. If to steal a March, you beat your *Tattoo*, as usual, and after it is dark, you strike your *Tents*, load your *Baggage*, and send it away with a good *Escort*. Then, about Midnight, you begin your March, and leave a Party in your Camp, to light Fires, a little before Day; which as soon as having done, they march after you, and join the Army. You avoid Towns and Villages, and make your *Van-Guard* stop all Persons they meet on the Road, and take them with you, lest they should discover your March.

OF DECAMPING.

IF you want to *decamp* from before an Enemy, you take the Opportunity to do it on their grand Foraging-Day, or make a *Feint*, as if you intended a *grand Forage*, and decamp at the same Time. You make a Disposition to march from the Right, and begin it in that Manner, and upon a sudden *Halt*, and march from the Left. By these Means you deceive the Enemy.

OF PASSING THE ENEMY'S LINES.

When you have LINES to pass, the GENERAL orders the Camp, near the Part he does not design to attack, and whilst he is there makes Preparations for passing, by ordering *Fascines* to be cut, and put at the Head of each Regiment; then he orders his heavy Baggage into some strong Town, and after he has well reconnoitred the Country, orders out a large Body of *Pioneers*, with

the Quarter Master General, and some Engineers, who are supported by several Battalions, whilst they are making Overtures, or filling up the *Fosse*, where the Army is designed to pass.

CARE TO BE PROVIDED WITH AMMUNITION.

Great CARE is taken that the Army be well supplied with *Ammunition*, as the Want of which has not been only the *Loss* of the Army; but the Means of *not taking the Advantage of the Enemy*, when they were worsted, and retiring.

This being a *Late Case*; GENERALS now have Tumbrills to each Brigade, *with Cartridges ready made, and always march with the Brigades*. When ever you are marching, either to attack an Enemy or retreat from them, you take all Strangers you meet with, till you come near the Enemy, or are out of Danger, lest they should be *Spies*, and carry Intelligence.

OF AN ARMY WITHIN LINES.

IF ever an Army is so weak as to be within *Lines*, you take Care to have Communications between Village and Village; and are sure to have small Parties of Horse patrolling towards the Enemy, and have *Videts*, and *Sentries*, posted so near one another, that you may have Intelligence. If the Enemy, or any Parties appear, you make your Head-Quarters, if possible, in the Center, and you have a *Line-of-Battle* marked out, for the Rendezvous, upon an *Alarm*, where you may wait for the Enemy, and attack them before they are informed, or may march to attack them. — As they pass, you cover your Flanks, by a fortified *Town, Village, River, or Morass*, and your *Field of Battle* is as near to your Works as possible. The GENERALS of each Wing constantly visit the *Out-Guards*, and see that the *Paroles, Videts, and Sentries* do their Duty, and are *alert*, which is the Means of preventing Surprise. Though the GENERAL in CHIEF has made all the Preparations for the Attack, if He sees it convenient, he suddenly files or marches off, from the *Right or Left*; by which Means he deceives his Enemy, and may possibly enter his Works without Loss: This was done by the late DUKE of MARLBOROUGH.

OF ADVANTAGES TO BE TAKEN IN LINES.

IF any *Village, or Woods* are in the Front, and not at a great Distance from your *Lines*, you are sure to keep them in Possession, (especially, if they flank your *Field-of-Battle*) you fortify them, and place Batteries there, *whereby you are able to destroy Numbers of your Enemy by putting them between Cross-Fires*.

Or

OF COMING NEAR THE ENEMY.

Whenever you are come so *near* the Enemy, and where you are to make Batteries, that the Horses are taken in the *Front* of the *Lines*, Parties (commanded from the Carriages, by *Serjeants*, or *Subalterns*) from the *Main Guard*, are sent with the *Cannon*, and when the Horses are come with them beyond the *SECOND-LINE*, to a Place appointed for them, there the Officers remain, and dispose of their Parties in such a Manner, *that the Drivers shall not carry off any of the Horses*; and wait there till they receive further Orders from the *COMMANDER-IN-CHIEF*, *General* of the *Day*, or *Colonel* of the *Train*.

OF OBSERVING THE MOTIONS OF THE ENEMY.

You keep small Parties of *Horse*, or *Foot*, continually out to watch the Motions of the Enemy; conducted by Persons who are acquainted with the Country.—By these Means they cannot *decamp* without your Knowledge. *And you do your utmost and are sure to disperse them whenever they do decamp.*

OF STOPPAGES.

EVERY Horse-Guard-Man, *Horse-Grenadier*, *Trooper*, and *Dragoon*, has stopped from him, while in the Field, *Six Pence* per Day, *Four Pence* of which goes towards remounting the Troop, and the other *Two Pence* is laid out for Camp-Necessaries for the ensuing Campaign.

When the Army comes into *Winter-Quarters*, the Foot-Soldiers have *Four Pence* per Week stopped from them out of their *Subsistence*, commencing the first Pay-Day, which *Stoppage* continues till they take the Field. This *Sum* is laid out in Camp-Necessaries, and is lodged in the Pay-Master's Hands, once in a Month, or as often as the Commanding Officer thinks proper.

See PALLADIUM 1757, for the METHOD of making a correct ROSTER GENERAL. We propose to give *Instances* of the *Stratagems of War*, and a *Specimen* of every Thing curious and useful concerning the MILITARY ART.

To be continued annually.

OF
 MAKING WAR,
 AND OF
Military CONDUCT,
 In GENERAL.

Ye GODS, what *Harrook* does *Ambition* make
 Among your WORKS !----- CATO.

We took up *Arms* not to revenge ourselves,
 But free our Country from oppressive *Wrongs*.

A General Maxim. Of Preparations for War. Of the General's Design. Of his Knowledge of the Enemy's Country. Of the Disposition of Forces marching thro' an Enemy's Country. The Order of marching Forces from the Place of Rendezvous. Of approaching the Enemy. The General's Precautions. Disposition of Forces coming to Action. Of Bravery, Conduct, and Reward. Of Marauding and Oppression. Of a good Army on just Designs. Of going upon sudden Service, or Attacks. Of Honours won, and Preferment ensuing thereon. Of Rashness and Prudence. Of Victory. Of being beat. Of Trading in Blood and War. Of Example and true Honour. Of Duelling. The Regulations of the King of Prussia's Forces, with Remarks.

A GENERAL MAXIM.

A WISE PRINCE, before he engages in an Expedition, draws up the whole Prospect of Gain, in Case Success should crown his Enterprize; and that of Loss, in Case it ends in Disappointment, and Misfortune.

He

He weighs his Hopes with his Fears, the Hazard of Losing with the Probability of Gaining; who will never embark in any Enterprize uncautiously, when he knows, though Success should follow his Standard, that he shall only conquer an inconsiderable Province, or contemptible Town; but if it should fly over to the Enemy, his whole Kingdom will be the Reward of their Victory, and the Price of his Defeat.

On the other Hand, if a PRINCE falls upon his Neighbour, at least with equal Forces, and knows if Fortune favours his Arms, he shall gain a considerable Advantage. and though it should prove, he shall only lose an insignificant Fortrefs, or perchance not even that, in which Case, if he be disappointed of Success, he carries off Honour, and the Title of wise and prudent: He played his Game well though he lost the Sett, and every Judge of his Conduct must be so just to his Merit as to confess his Venture was prudent, though not successful.

When two uncertain Opinions offer themselves to our Choice, we are obliged, by all the Laws of Prudence to chuse that which cannot prejudice us much, though it should happen to be false, and will turn to our Advantage if it should happen to be true. And, on the contrary, it is an infallible Symptom of a wrong Judgment to chuse with that Opinion, which, though it may be true, promises but an inconsiderable Gain, and threatens us with Ruin and Destruction, if false.

This MAXIM may be laid down as a Postulatum for Practice; and is no less evident than any Axiom in the Mathematics.

By this MAXIM the wise Prince governs his Councils; the able Statesman directs his Viceroy; the prudent General regulates his Conduct; the thriving Merchant puts to Sea; and the cunning Gamester models his Play.

A PRINCE being determined to make War, he provides such Men, Arms, Instruments, Stores of all Sorts, and Money, as will best answer the Intent of his Enterprize.

THE necessary Preparatives for War, by Land, being made, some City or Town is usually made the Staple of Ammunition, to put the Train of Artillery in Equipage, to review or muster the Army as well Infantry and Cavalry, as the Train; and to dispose it in Order of Battle, as if it were that Day to come to Action with the Enemy.

GENERAL'S DESIGN, KNOWING THE COUNTRY.

THE Disposition of the Army for Action is according to the Purpose the General intends to execute. Whether to march and conquer a Country; relieve a Place besieged; give Battle; march through an Enemy's Country, or make Retreat.

If he intends to conquer a Country, the Condition and Strength of that Country is by him foreknown and estimated; how it is peopled; whether it is best fallen upon by one or more Armies; and of what Disposition it is in for Defence; who makes him-

self acquainted with its Alliances, and the Means of breaking them; or, at least, to hinder their Forces joining, if possible. Who also learns the *Entrances, Passes, and Issuings* of a Country; its *Woods, Mountains, Rivers, Straits, Harbours, Keys, Bridges, Ports*; the Situation of its *Cities*; its Places of *Defence, Garri-sons, and Stores*. And is informed of the Fertility or Scarcity of the Country; for regulating the Quantity of *Provisions* to be carried with the Army, which is the Business of *Spies* to bring the GENERAL an Account of; and what Provisions and Forage may be had in it.

Likewise, he finds a *Plan* of the Country, in a general *Map*, is necessary as well as *Maps* of particular Parts or Places of it, for knowing their Situations and Distances the more *exactly*. And whether the Country be level, or mountainous, and the Nature of its Soil; and to judge, by its Extent, what Front may be given to the Army.

OF THE DISPOSITION OF FORCES MARCHING THROUGH AN ENEMY'S COUNTRY.

If the *General's* Design is to relieve some *Place besieged*, to convey Supplies to it, and force some *Quarter* of it, he contracts the *Wings* of his Army in Marching, and keeps himself in close Order.

If *Battle* is designed to be given the Enemy (the Occasion of-fering and Country suiting) he sufficiently extends the *Front* of his Army, yet not so much, but that it shall be strong enough in *Depth* to sustain the Enemy's *Charge*, to have the *Van, Center* and *Rear* deep, and strong enough to hinder a *Surprise* on the *Flanks*, that every Man may fight; which is one of the most important Considerations. And this with a farther View of enclosing the Enemy in a *Crescent*, so as to charge him in *Front, Flanks* and *Rear*.

If the *General's* Design is to *traverse, or march* through an Enemy's Country, he keeps his Army together, in one Body, without disuniting of any Part; and moves by *Columns*, choosing open and level Plains, and avoiding *Woods* and *Hills*, as much as possible; securing *Quarters*, and carrying *Provisions* sufficient for the Time of the Passage. It is known to be difficult to lead an Army through an Enemy's Country, divided by *Rivers*, covered with *Woods*, and withal mountainous. For, if in such a Situation, it has any Places of Strength, and but a small Army to defend it, the superior Army may easily be molested or hindered in its March; the Passage of its Provisions cut off, that be attacked on the *Flanks* or *Rear*, or surprized by an *Ambuscade*, and several Occasions sought to annoy it.

ORDER OF MARCHING FORCES FROM THE PLACE OF
RENDEZVOUS.

THE *Army* being reviewed at the Place of *Rendezvous*, it usually marches off in *Columns* to the Place of *Encampment* that Night (the Country permitting it so to do) that the *Whole* may learn to march in Order of Battle. If the *Unevenness* of the Country hinders its Progress, the *Pioneers* make Way by filling up the *Ditches*, breaking down the *Hedges*, and laying *Bridges* of *Beams* or of other Kind, over the Rivers and Brooks; and Planks over the *marshy* Ground, or *Morasses*.

In the Center, the *Artillery*, Provisions and Baggage, march on the *Wings* of these, one Part of the *Infantry* march in loose Order.

In the Center, the *Infantry* march in Form of double Battalions, as much as possible, in all the *Lines*.

OF APPROACHING THE ENEMY, AND THE GENERAL
PRECAUTIONS.

IF the Enemy is near to the Place where the Army is arrived, the FIELD MARSHAL having chosen a Place for *Action*, gives Orders for placing the *Artillery*, and appoints the Quarters and Places for the Regiments, and Provisions. He then orders the *Camp* to be intrenched round according to the *Rules* of *Fortification*. For which Purpose he endeavours to lodge his Army, at a proper Time, that he may find Opportunity to send for Forage, make Retrenchments, divide the Quarters, pitch the Tents, order the Guards, discover the Motions of the Enemy; and to prevent a Thousand Inconveniences, he knows which the Night might bring on, by his not taking the Advantage of *Time* and *Place*.

DISPOSITION OF FORCES COMING TO ACTION.

IN what Manner soever an Army be drawn up for *Action*, Care is taken by the COMMANDER in CHIEF, that all the greatest Part may be brought to fight, and that the ATTACKS, be given, by dividing the Army into *Wings*, Center and Rear, or *first* and *second* LINES, with a *LINE* of *Reserve*.

The *Horse* then is so disposed, that they may be in a Capacity to second the *Foot*; in such Manner, that the latter find themselves broken or disordered they may rally under the Cover of the former; having no other Battallion, behind them, near, by which they might again be put into Disorder.

The *Artillery* is so placed, as not to hinder the Advance or Retreat of the Battalions and Squadrons; but to annoy those

the Enemy. Against whom Part of which is usually employed in Cannonading, during the Advancement of both Armies to a close and general Engagement; and especially a Number of *Field Pieces* alternately placed, in the *Front-Line*, serving to break and scatter the Enemy, Advancing or Retreating.

The Body of an Army, in Battalions and Squadrons, is disposed of *Chequer-wise*, in different Lines, with Intervals left for the Battalions and Squadrons, in the Rear, to march through in Action, in the first Line. The *Squadrons* of Cavalry are placed in the *Wings*, and in the *Rear*, to cover the whole Army; with some Squadrons between the Battalions to the *Right* and *Left* of the Center (which is commonly filled up with Foot) in all the Lines.

OF BRAVERY, CONDUCT AND REWARD.

THE ARMY being ready for Action, when Courage is governed by the exemplary Prudence of a JUDICIOUS COMMANDER, it generally proves triumphant. No Trust is to be put in a fiery Constitution, or in a Courage that rises and falls with the Barometer.

Man Bravery can rescue no Man from Misfortune, but being joined with Duty, and Conduct, will be his Support. A good Soldier, on his Duty, is as ready to meet Death, as to encounter the Enemy, since nothing but Providence can protect him. And if he fights with Courage and Conduct, he will come off a conqueror or fall a Hero. The greatest Princes and Generals, are sustained in Time of Action, by Duty, Fortitude and a good Cause. And when Duty and Justice are the Motives of their Pursuit, Conquest and Glory are commonly their Reward. To seek Advantage from Labour and Merit are Pretensions that rise above ordinary Views. To serve our PRINCE, and Benefit our COUNTRY, is to oblige Posterity and deserve Reward from God and Man.

OF MARAUDING AND OPPRESSION.

NOT to Murder or Steal, is a Precept as binding in the Field, or Winter Quarters, as it is in the Camp or City. Marauders are a disgrace to the Camp and military Profession, who deserve no Quarter from their Officers than they give to poor Peasants; nor should they find more Mercy than they shew in sacking of Villages. The Rapes and Violences of Soldiers, rebound on their indulging Commanders. Licentious Armies, spread Plague, instead of giving Protection. And where Terror and Oppression, march before the Camp, a thousand Imprecations of the Peasants follow it. Houses are plundered more than towns are stormed; Henroosts, and Sheep-Cotes, are assaulted, more than Counter-Scarps. And where the lawless-Soldier sows Ruin with Fire and Sword, there Commanders spread Oppression with Safe-Guards. Protection from these is more expensive

expensive than the Avarice of those; and Kindness and Forgiveness prove equally cruel. The Remedy is applied, when the Country *can lose and the Army gain no more*. Yet these are the Pranks sometimes played among *Friends and Allies*. But if Friendships be so expensive, tis not worth the Purchase. And it may be more tolerable to be at the Mercy of a Foe, than thus to suffer by the *Avarice of a Friend*; since to be hug'd or pistol'd to Death, are equally destructive. We read, that Mortality, for *these Offences*, has swept off whole Companies without Remedy and buried, in Oblivion, *Regiments without Honour*; as whole Armies have *melted away*, for the same Cause, of Oppression. For when Officers and Soldiers smile at these Insolences, it has been observed, their Mirth commonly changes to a more dismal Cry.

OF A GOOD ARMY ON JUST DESIGNS.

THE GLORY OF AN ARMY most appears, when the Sword is drawn to defend Justice, and the GENERAL'S STAFF is lifted up to quell HYDRAS and subdue Monsters!

The great BELISARIUS points out to Generals, this short and sure Way to Victory. Know, Companions (said he) I am come to Fight, not so much with Weapons of Steel, as with the Arms of Justice, and Religion: Without which how can we expect Victory or hope for Success? My Camp shall not be polluted with Rapine, nor your Swords with Cruelty. Without Justice, Courage is felt, and a PROFLIGATE HERO, will be made to turn his Back on an innocent Coward.

This Speech raised the General so high in Esteem among the Italians, that it was hard to determine whether they more admired his Conduct and Bravery, or his Discipline and Justice. The very Clowns loved the Legionaries, as their Brothers, and adored their General. Never did Man undertake greater Things with a less Army, nor came off with more Glory. With hardly twelve thousand Soldiers, he cleared Africa of Tyrants, and almost extirpated the Goths in Italy. He took Rome, and subdued the Visigoths, at the Head of a hundred thousand Men, leading his Captive to Constantinople. Thus Success follows a good Cause, Order and Discipline, with a Handful of Men, oftener than it follows a Multitude without those Attendants.

OF GOING UPON SUDDEN SERVICE, OR ATTACKS.

THE General's Command to go upon any Service should be received with Cheerfulness and executed with Vigour; where the Difficulty of the Enterprize is less to be regarded than the Duty.

Success, sometimes, forsakes Prudence and Valour, to wait on Rashness and Fury; but Designs laid with Judgment, and executed with Resolution, generally crown the Day.

'Tis neither prudent to expose your Person out of *Punctilio*, nor to evade a Post out of Prospect of Danger. Life, is of more Value than *Grimace*, and less than Reputation. It is worth living to make an *honourable Exit*, and is more glorious to fall in the Field than come off with a Failure of Duty.

Some have stood within an Inch of Ruin to play at Rubbers with a *Cannon Ball*; others have defy'd the Dangers of *Eassions* and *Half-Moons*, and were not able to live out of the Reach of the Enemies Batteries. Some were ready to expire for Fear of living too long; who *dun'd the General* to be sent upon every desperate Attack, where neither Duty, nor Prudence required their Service: As the *Indian Women* rave to be cast upon the Funeral Pile of their Husbands, bearing a Repulse with Indignation. This is mistaking *Fortitude* for *Temerity*, and placing *Bravery* in *Folly*.

A Gentleman of this Disposition, bearing a Command in the *Cavalry*, in Spite of Dissuasion, would quit his *Horse* to court Honour on *Foot*: He stormed a *Counter Scarp*, and fell the first Man in the Action. He went on without Reason, and was brought off without Life, without Reputation. All pitied his *Misfortune*, though none excused his *Conduct*; some stiled him *brave*, though none ventured to call him *prudent*. Bullets distinguish *rash Volunteers* in the Crowd, and *Providence* seems to withdraw its Protection from *Straglers*, and leave them under another Government. This *Heat* is thrown on Pretence of *Preferment*, whereby the *Presumptive* distinguish themselves from the Crowd, and plead Merit by doing more than their Fellows.

A *Soldier*, no doubt, should look above his own Station. He that confines his Desires to a moderate Post deserves none; content with a mean Commission marks a *narrow Soul*, and ungenerous Disposition; a Symptom of more *Phlegm* than *Heat*; rather of one cut out for a Shop than the *Camp*.—Distinguish then yourself (in God's Name) but affect not to be remarkable for doing it by Folly. *Though Bethlehem is in the Way to Hogsden, yet it lies out of the Road to Promotion*. Life was given for a noble Use, and therefore it should not be exposed foolishly; it should no more be thrown up out of a *Bravado*, than out of a *Pet*; nor sacrificed rashly in the Fury of a Fight, any more than in the Folly of a *Duel*.

When a *noble Occasion* offers, that is founded on Duty, let not the *Advantage* escape you; but lay hold with Transport, and thank the *GENERAL* for the Opportunity and Honour. Exert a Resolution equal to the Difficulty, and becoming the *Enterprise*. Be neither slow nor boisterous; fearful nor presumptive; be more solicitous how to go on than to come off; and take a *greater Regard to your Conduct than to your Life*. These Occasions, not rare in modern Camps, open a fair Prospect for *Preferment*, by furnishing Matter for *Courage* and *Merit* to work on; and, if we fall, it is in the *Discharge of our Duty*. To die in the Defence of our Post is honourable, if we dispute our Ground out
of

of Duty. And tis better and easier to die by a Ball, or a Sword, than by a Fever.

If *Merit* raises you to the Dignity of a *General*, your Zeal for your PRINCE'S SERVICE, no Doubt, will be as high as your Station. Favour conferred, demands Gratitude; and a *Subject* can only shew his Duty by his Service. If you act as a public Person, no private Views will influence your Conduct.

OF HONOURS WON, AND PREFERMENT INSUING THEREON.

The Honour of a brave, or glorious Action is yours; but the Profit of it your *Master's*.

High-Posts are apt to intoxicate when Men become great. But, *Honours* are only the ornamental Impressions, stamp'd by the SOVEREIGN, on the Superficies of the *Subject*, that may soon be changed, or obliterated. They alter not the *Metal* they are stamp'd upon, nor give it intrinsic Value; but suppose *real Worth* rewarded: Yet we find the GREATEST MEN are the most moderate in their Opinion of themselves.

OF RASHNESS AND PRUDENCE.

Rashness is known to be the Ruin of *Commanders*, who may easily slip into it, because it has the Appearance, and borrows the Name of *Courage*; but yet is of another Race, and nothing allied to that Family. The one descends in a right Line, from *Caution* and *Prudence*; the other, directly, from *Folly* and *Presumption*. Success seldom waits on *Rashness*, twice it was prosperous and triumphant; in *Asia*, under the MACEDONIAN CONQUEROR; and in *Greece* under *Aurelius* the First, (observed by *Curtius*) who by his *Rashness* won an Empire, as by it the Second *Aurelius* almost lost one. But these *Examples* are rare, and the *Commander*, who steers his Conduct by *Rashness*, must go on by Hazard, and therefore will seldom meet Success. *Prudence* leaves nothing unthought of, or unfought, which that can suggest; and so (if possible) leaves nothing to Chance, or Hazard. And though a *Commander*, directed by *Prudence*, will not engage so often, yet he will the seldom be beat: Since tis wiser to keep Possession of his Ground or what he has got, than, out of *Presumption*, and *Eagerness*, to lose it. In coming to Action, he fights as if he trusted to his Arms more than to his Courage, which may be trepanned; but seconded by *Caution* and *Prudence*, is for the most Part invincible. Yet if Numbers should over-top Merit, Chance over-rule *Prudence*, and bear down Conduct and Valour, the *Commander*, (thus obliged to abandon the Field, and leave Victory behind) nevertheless may bring off Honours.

Fortune is known to be never steady to her Friends, nor implacable to her Enemies; never constant to the same Situation, nor true to the same Interest; she is now on this Side; now on

but steadfast to neither ; and alike suspected by all. A Mixture of good and bad Events usually succeed. Now *Victory* perches on your *Standard*, anon it flies over to the Enemy ; sometimes you will conquer, and sometimes be overcome : So that a *General* moves in a Circle of Prosperity and Adversity, whose regulated Confidence is not elated by one, nor wary Courage sunk by the other. They are neither presuming nor desponding ; but, in the one State, are apprehensive of a *Check* ; and, in the other, they hope for *Advantage*.

OF VICTORY.

A *Victory* that intoxicates the *Conqueror*, is more dangerous than a Defeat ; as it disarms him of *Caution*, introduces Negligence, and lulls to sleep with a treacherous Security. Who lies under these Disadvantages lies at the Mercy of the Enemy ; and, if he leads an Army of *Lions*, it may be routed by another of *Snakes*.

VICTORIOUS lost himself when he won the *Battle* and *Applause* ; his Reason being dismounted, he left the *General* behind. His Prudence forsook him, and the *Ignis fatuus* of exulting in his late Success led him beyond the Bounds of Council and Caution ; so that at the next *Battle* he lost the Day before the Attack was begun. Never were Men disposed of with less Judgment, nor took up more disadvantageous Ground ; One *Wing* had no Support ; the Horse were no Support to the Foot, nor the Foot to the Horse ; that one might imagine he played Booby, by resolving to try the Chagrin of a Defeat.

OF BEING BEAT.

ON the other Hand, the prudent COMMANDER sinks not under Misfortune ; to suppose all lost, is the short Way to loose all in Earnest. When Fortune is at a low Ebb, he expects she will rise ; or when she frowns, he expects she will quickly smile ! The brave DUKE WEYMAR, received a severe Check from the *Imperialists*, and though his Troops were overthrown, his Heart was not conquered ; but this Courage rose with his Fall ; his Pulse beat bigger, and he resolved, the next Day, to obliterate the Disgrace of the former with the Blood of his Conquerors. He kept his Resolution, and gained an intire Victory, and *Brisac* was the Price of his Endeavours. The News of his Victory overtook that of his Loss, and his Glory posted through Europe, as swift as his Misfortune. Had he not lain under a Cloud, his Merits had not shone so bright ; the Disgrace of the first Day redoubled the Glory of the Second.

OF TRADING IN BLOOD AND WAR.

WHEN a General drills on Wars, he sacrifices his Prince's Interest to his own, and the public Tranquility is sold for private Lucr. Provinces are stained with Blood, and Cities flame to crowd his Antichamber with Fawners on his Dignity. People, in such Situation, groan under all the Pangs of Poverty to pay his *Sold Guards*; and agonize under Hunger to supply his *luxurious Table*. And that he may be necessary to the State, the Subject must be fleeced, by *Taxes*; and Commerce must sink, to raise his *Fortune*. Such a Conduct may nick with *Policy*, but is at Variance with Generosity and Equity. *Marshall de Byron* had this Humour; for when his Son prosecuted a Victory, *Halt* (he cries) *have you Mind to plant Cabbages at Byron?* This Disposition is much the same with that of the *petty Surgeons*, who never close their Patients Wounds till they have drained their Purses. He had drawn much *Christian Blood*, and, in the End, spilt his own in *Skirmish*.

It is much more glorious to end a War with Advantage, than to continue it with Bravery. A General, in a Hackney-Coach without Attendance, that has obliged a Nation with an *honourable Peace*, is more worthy than him who rides triumphant at the Head of an Army, plunging his Nation in an *expensive War*!

OF EXAMPLE AND TRUE HONOUR.

WHEN Example spreads Contagion in an Army (whether Drunkenness, Rencounters, Duelling, &c.) better Example will cure it. For the Perfume of Superiors will always influence and charm Inferiors; and Imitation, not only catches but spreads. If Regularity and Conduct be made the high Road to Preferment, how pleasant and easy it will be to travel the Way? And who would dare to offend Superiors that are always known to reward Merit? Good Humour and a noble Behaviour command Respect from the Multitude, who are more charmed with good Sense and Qualities*, than they are dazzled with *Scarves and Gold Lace*. Old *Fabricius* in his *Ferkin*, and *Curius* in the Chimney Corner, were more esteemed than *Caligula*, or *Heliogabalus*, in all their Pomp and Splendor.

* THE LIVING EXAMPLE of real Dignity and Honour.

OF DUELLING.

SOME greatly mistake Honour for ill Custom. When Gentlemen lay out their Courage in Duelling, instead of employing it in the Service of their Country.

He is but a Criminal, who deprives his King and Country a Subject. And if Gentlemen would consider, who is Aggrieved there would be always more Honour in acknowledging, than persisting in, an Error.

to revenge a mistaken Affront, or Piece of ill Manners, persons of Estate should wisely stake their whole Fortune to the toss of a Die, to determine which of the two Adversaries shall be the conqueror; yet staking their *two Lives*, in a *Duel*, instead of a *Die*, would be the greater Hazard.

Reason, opposed to Heat, Offence and ill Nature, is the best Means to conquer them, and gain Victory and Esteem. If Men would choose to be happy, and suffer no Wrong, the best way for obtaining those Ends, must (if rightly considered) depend on their own Conduct, where every Person stands in his own Light.

The foregoing MILITARY REMARKS (not designed to be any) are humbly submitted to JUDICIOUS SUPERIORS,

THE REMARKER.

KING of Prussia's Articles of REGULATION, for the CONDUCT of his TROOPS.

When Soldiers are drunk, Officers and Non-Commissioned Officers are to enter into no Altercations with them, much less fight with them; because many Instances may be produced, wherein Officers, from the like Provocations, have forfeited their Lives in Liqueur: But the Day following when they are become sober again, they must be punished with double Severity, for the Injuries they are guilty of.

Since, after Subordination, Nothing is more essentially necessary than strict Discipline amongst the Soldiers, so it is his Majesty's Command, that the Generals of Regiments, and Commanding Officers of Battalions, shall keep their respective Regiments and Battalions, and likewise the Captains of Companies, under strict Discipline, and connive at no Irregularities. The Soldiers shall be constrained to a regular Observation of all their Rites and Ceremonies of the Religion which they profess. No common Whores must be suffered to reside in a Garrison; but the Commanding Officer, on the Complaint, shall order all such to be stripped naked and turned out. Gaming shall be permitted among the Non-Commissioned Officers and private Soldiers; and every Soldier, who shall be caught at Play, shall be put Prisoner; and the Day following shall be flogged with the Cantelepe without Trial, eight Times, through two Rows of Men.

The Commandments of Regiments, in Garrison, must take Care that their Officers are guilty of no Irregularities; that they do not abuse the Burgers, or their Landlords, nor contract Debt, but subsist themselves upon their Pay: And Officers, in Garrison, are to be informed, that it is his Majesty's firm Opinion, that no Officer can keep a Company in proper Order, without setting a good Example himself; and that it is an universal, and just

just Observation, that the Company of a Captain, who is an *Oeconomist*, is always in better order than another whose Captain is addicted to Extravagancies: A Lieutenant therefore, or Ensign who is given to bad Habits, and does not conquer or correct them, shall never be preferred to a Company.

4. As it appears, by daily Experience, that most Quarrels happen over Liquor, excessive Drinking must be altogether prohibited amongst Officers, in general; and the Colonels and Commandants of Regiments, are, in the strictest Manner, to forbid it: And likewise to keep a watchful Eye over the Behaviour of their Officers, in this Respect.

5. When Officers, notwithstanding all Order to the contrary, get drunk together, begin Quarrels, Encounters and Duels either in Liquor or at Play, or are guilty of any other like offensive Practices, they must be put under Arrest, and tried by a Court Martial, which shall adjudge a double Degree of Punishment for every Crime committed in Consequence of Drunkenness: As for Example, when an Officer, being found guilty of a Crime, for which, according to the Articles of War, he is condemned to lose three Months Pay, to be confined a Year in a Fortress, to be cashiered, to be shot, or beheaded; for the same Crime committed when drunk, he shall lose Six Months Pay instead of three; shall be confined two Years instead of one; shall be cashiered with the Addition of Infamy, instead of simple dismissal; beheaded instead of being shot, and instead of being beheaded be hanged.

6. Note, Without Sobriety, Men cannot have Heads to contrive, nor Hands to execute important Enterprizes; and, therefore, too much Care cannot be taken to banish Drunkenness from the Army. This was remarkably experienced here, in the late War, when the sober frugal Puritans triumphed over the haughty extravagant Royalists, laid both MITRE and Crown to the Dust; and, in their republican Capacity, became terrible to Europe!

REMARK ON THE FOREGOING ARTICLES.

IN England, where the Subject is blest with a higher Liberty than in Prussia, Crimes are suppressed, or kept under, by a more severe Punishment, and Justice, as well in the Army, as in the Rest of the Community. Drunkenness and its Consequences in the English Army are suppressed by Confinement, low Diet, Whipping of the Soldier, and cashiering the Officer.

But where Crimes (the Consequence of Drunkenness) are common, the Civil Law is at Hand to take Cognizance of such Criminals.

CHARACTER of the FRENCH.
By BRITANNICUS.

GALLIA, through many Ages, fam'd
For broken *Leagues* and cancell'd *Ties*,
And known Deception of *Allies*,
With Indignation through the World is nam'd !
Her solemn Faith's a Joke,
No sooner made but broke ;
Per Foy with her cou'd never stand the Test,
When e'er oppos'd to Interest.
Her fawning *Smiles* prognosticate
Ruin to some *unhappy State* ;
Her *Promise*—but a *Rope of Sands*—
Which not a Moment binds her Hands ;
Intrigue, and artful Guile,
Still colour'd with a glozing Stile,
Well suited to a *Lawyer's* * *Tricks*,
Fill her whole Round of *Politicks*.

The *Peace* she signs
She soon declines,
When sought *Occasions* shews
A slight Pretence
To hurt her Friends,
Or harder Terms impose.
For Proof—*America* † behold !
In Blood and Rapine roll'd !

D 2

There

(*) Lord Bolingbroke complaining in his Letter to Mr. Prior of the unfair Dealings of the French, notwithstanding the Advance England had made towards a Peace, says therein, " Make the French ashamed of their sneaking Chicane ; by Heavens treat like Pedlars, or which is worse, like Attornies.

Jean Petit, in the Character he gives of his Countrymen, French Statesmen, says, that these are their political Maxims, Sincerity is a Disadvantage ; Perfidiousness is profitable. Fidelity is the Charter of a Prince. Faith is a foolish Maxim. Honesty is the proper Hinge for Government to turn upon, &c. In a Letter from Halifax, dated July 3d, 1753, the Writer says, sometime ago, Governor Hopson sent out a small Sloop to a Place called Sedore, in Order to bring up the Indians with their Peace called Treaty ; but these inhuman Wretches, barbarously murdered Mr. Cleveland, Part Owner of the Sloop, and five others, and afterwards scalped them. Mr. Caspile (an Interpreter) who declared himself a Frenchman, being the last Person of the whole Crew they saved alive ; who arrived last Night from Cape-Breton, and acquaints us with this terrible

There Britons, tho' to Freedom born,
 Are made the Scorn
 Of Savages, more fell
Than those with whom they dwell :
 Lost to Humanity—in cruel Sport,
 With Tortures, merciless, themselves divert,
 Taught by the Guiltful French the bloody Trade,
 More Savage still these Savages are made ;
 Their Christian Priests, (O horrid Fiends !)
 Religion teach for diabolic Ends,
Inquisitors of Hell—sent for their MASTER'S Good,
 Who preach Delight in Cruelties and Blood !
 Thus train'd for Mischief, form'd for Rage,
 They spare no Sex, or Age !
 But murder, scalp, and torture all
 Who into their relentless Clutches fall !
The Suckling, at the Mother's Breast,
Hugg'd in her Arms, and fondly press'd,
No Mercy finds—with her's its Blood is mix'd,
Both with the same vile Instrument transfix'd.
 So Hôtel Innocents, at Hanover of late,
 From RICHLIEU'S * FLAMES receiv'd their funeral Fate
 TROUBLED our RIGHTEOUS MONARCH hears
 The Tale, and scarce refrains from Tears ;
 His Subjects slaughter'd, and their Lands
 Plunder'd, by these unchristian Bands ;
 Seiz'd by the French, in Peace profound,
 Regardless of the settled Bound :
 Indignant Wrath his Bosom fills,
 To Heav'n and Earth appeals ;
 Resolv'd he will just Vengeance take
 On his perfidious Foes !
 And, in a Peal of Thunder, speak
 Accumulated Woes !

terrible Disaster. The Indians burnt the Sloop, and the Art
 of Peace before Mr. Castile's Face, and bid him inform
 Governor of the whole Affair on his Arrival at Halifax.
 this is owing (*adds the Writer*) to the Perfidiousness of our Ne
 bours the French ; whose Priests tell the Indians, *that our Savi*
was born in France, and crucified in England. That the Eng
are all Heretics, and it is doing God good Service to kill them.
 * Marshall Duke of Richlieu, having taken the Island of *Martin*
 contrary to Treaty, and afterwards invaded the *Hanover* near *D*
 nions, at the Head of a numerous Army, ordered the *Hutch*
Orphan-Hospital there, to be burnt, before the Children could
 got out ; who thereby suffered in the Flames. Poor *Indians*
 phans being thus made the first Objects of military Valour,
 out-doing King Herod ; and also *Erestratus*, who burnt the *Tem*
 ple of *Diana*, to be signalized,

Yet, ere he takes the *Bol* in Hand,
 Pacific Measures tries ;
 Fain wou'd he spare the Blood of Men,
 Yet hear his Subjects *Cries*,
 The *FOR*. Case harden'd in his Guilt,
 Remorseless for the Blood he spilt,
 His barb'rous Schemes pursues ;
 Bids his inhuman Savages,
 And *Myrmidens* * their Humour please,
 To answer *all their Vexes*.
More—to insult the *BRITISH CROWN*,
 Equip'd a Fleet of Force ; †
 And durst their Breach of Treaty own,
 Unfeeling of Remorse :
 This warlike *Apparate*
 Prepar'd to give the destin'd Fate
 To poor *Minerva's* Iſle ;
 In hostile Pomp they late convey,
 A-cross the Sea,
 So Speed by Force and Guile.

* Burn the Children in the *Hotel* ; commit Rapes and Violences on the Hanoverian Inhabitants ; and plunder, sack, and destroy !

† The French Fleet under the Command of M. *Galiffioniere*, sail'd from *Toulon*, April 8th, and arriv'd at *Cuidadella* in *Minorca*, the 18th of the same Month, 1756.

The ROYAL CHRONOLOGER for the YEAR 1759:
 Being a MEMORANDUM of the Holidays, Birth-
 days, remarkable Days, &c.

CHRONOLOGICAL NOTES for 1759.

Dominical Letter, N. S.	G	Quadragesima, or 1st Sunday	
Old Style	C	in Lent	Mar. 4
Golden Number	12	Palm Sunday	April 8
Cycle of the Sun	5	EASTER	15
Indiction	7	Ascension Sunday	22
Epact	1	Regation	May 20
Septuagesima Sunday	Feb. 11	Ascension-Day	24
Sexagesima	18	Whitsunday	June 3
Quinquagesima, or Shrove-Sunday	25	Trinity-Sunday	10
Ascension-Wednesday	28	Advent	Dec. 2

HOLIDAYS

HOLIDAYS kept at

The EXCHEQUER,
STAMP-OFFICE,
EXCISE-OFFICE,

CUSTOM-HOUSE,
and
SOUTH-SEA-HOUSE.

For 1759.

Ms.	D.	Holidays.	Ms.	D.	Holidays.
Jan.	1	Circumcision.	July	15	St. Swithin.
	25	St. Paul.		25	St. James.
	30	K. Charles I. Mart.	Aug.	1	Lammas-day.
Feb.	2	Purif. V. Mary.		24	St. Bartholemew.
	27	Shrove Tuesday.	Sept.	2	London burnt.
	28	Ash Wednesday.		14	Holy Rood.
Mar.	1	St. David.	Oct.	21	St. Matthew.
	25	Lady-day.		18	St. Luke.
	13	Good Friday.		22	K. Geo. II. crown'd.
Ap.	16	Easter Monday.		28	St. Simon and Jude.
	17	Easter Tuesday.	Nov.	1	All Saints.
	18	Easter Wednesday.		2	Pis. Orange born.
	23	St. George.		4	K. William born.
	25	St. Mark.		5	Powder Plot.
May	26	Duke Cumb. born.		9	Lord Mayor's Day.
	1	St. Philip & James.		10	K. Geo. II's Birth-day kept.
	24	Ascension-day.	Dec.	28	Q. Eliz. Accession.
June	29	K. Cha. II. Restor.		30	Pis. Dow. W. born.
	4	Whitfun-Monday.		21	St. Thomas.
		Geo. P. of Wales b.		25	Christmas-day.
	5	Whitfun-Tuesday.		26	St. Stephen.
	6	Whitfun-Wednesday		27	St. John.
	11	St. Barnabas.		28	Innocents.
	22	K. Geo. II. Inaug.			
	24	St. John Baptist.			
	26	K. Geo. II. procl.			
	29	St. Peter and Paul.			

N. B. At the Custom-house there is no Holiday on St. David, Easter Wednesday, Duke of Cumberland's Birth-day, Whitfun Wednesday, St. Swithin, Lammas-day, Fire of London, or Holy Rood.

At the South-Sea-House there is no Holiday on Valentine, St. David, St. Swithin, or Holy Rood.

ALL the HOLIDAYS and REMARKABLE DAYS for the YEAR
1759.

††† The Festival marked with * is preceded by a Vigil or Fast.
If any of the Feast-days marked * fall upon a Monday, the Vigil or Fast must be kept on the Saturday before, and not on the Sunday, which is the greatest of Festivals.

JANUARY

JANUARY xxxi Days.

- 1 Circumcision.
- 4 Sir Isaac Newton born 1643, N.S.
- 5 Old Christmas Day.
- 6 Twelfth-day, or Epiph.
- 7 1 Sunday after Epiph.
- 8 Lucian.
- 10 Princess Elizabeth b. 1740.
- 13 Hillary.
- 14 2 Sunday after Epiphany. Oxf. & Camb. Ter. beg.
- 15 Exchequer opens.
- 17 Old Twelfth-day.
- 18 Pifca.
- 20 Fabian. Oct. Hil. 1 ret.
- 21 3 Sunday after Epiphany.
- 23 Hillary Term begins.
- 25 Conversion of St. Paul.
- 27 Quind. Hil. 2 ret.
- 28 4 Sunday after Epiphany.
- 30 K. Cha. II. Mar. 1648-9, O. S. 12 min. past One.

FEBRUARY xxviii Days.

- 2 Purification of Vir. Mary or Candlemas-day.
- 3 Blaize, 3 ret.
- 4 5 Sunday after Epiphany.
- 5 Agatha.
- 9 Oct. Purif. 4 ret.
- 10 Dies Scolastica at Oxford.
- 11 Septuagesima Sunday.
- 12 Hillary Term ends.
- 13 Old Candlemas-day.
- 14 Valentine.
- 18 Sexagesima.
- 24 St. Matthias.*
- 25 Quinquagesima.
- 28 Hare - hunting goes out Ash-Wednesday.
- 29 Cam. Com. for B. A.

MARCH xxxi Days.

- 1 David.
- 2 Cedde or Chad.
- 4 Quadragesima, 1 Sunday in Lent.

- 5 Princess Mary of Dieffe, b. 1722.
7. Perpet. Maurit. 7, 9, 10 Ember.
- 11 2 Sunday in Lent.
- 12 Gregory.
- 17 St. Patrick.
- 18 3 Sunday in Lent. Ed. K. of West Sax.
- 19 Princess Louisa Ann, b. 1719. Joseph.
- 20 Cuthbert. Equal Day and Night.
- 21 Benedict.
- 25 4 Sunday in Lent. LADY-DAY 1 Q. Day. Annunciation*. Fr. Edw. born, 1739.

APRIL xxx Days.

- 1 5 Sunday in Lent. All Fools-Day.
- 3 Richard.
- 4 Ambrose.
- 5 Old Lady-day.
- 7 Oxf. and Camb. Terms end.
- 8 Palm Sunday.
- 12 Maunday Thursday.
- 13 Good Friday.
- 15 EASTER Sunday. Sun and Clock together.
- 16 Easter Monday.
- 17 Easter Tuesday.
- 22 Low Sunday. 1 Sunday aft. Easter.
- 25 St. Mark. Oxf. and Camb. Terms beg.
- 26 DUKE of CUMBERLAND, b. 1721.
- 27 Victory of Culloden.
- 29 2 Sunday aft. Easter. 1 ret. Cambridge latter Act.

MAY xxxi Days.

- 1 Philip and James.
- 2 Easter Term beg.
- 3 Invention of the Cross.
- 6 3 Sunday aft. Easter. 2 ret. St. John Ant Port. Lat.

12 Old

- 12 Old May-day.
 13 4 *Sund. aft. Easter.*
 14 Westmin. Election. 3 ret.
 20 Rogation. 5 *Sund. aft. Easter.*
 4 ret.
 24 Pr. Fred. Will. b. 1750.
 Ascension Day.
 25 5 ret.
 26 Augusine.
 No Night, all Twil.
 27 6 *Sund. aft. Easter.*
 Venerable Bede.
 Easter Term ends, in 17
 Days, or 43 Days from
 Easter.
 29 K. Charles II's *Nativity*
 and *Reloration.*
 31 Ox. and Camb. Terms
 ends Thurs. bef. Whits.

JUNE xxx Days.

- 1 Nicomedes.
 3 *Whitsunday.*
 4 *Whit-Monday.*
 George Prince of Wales
 born, 1738.
 5 *Whit-Tuesday.*
 Boniface.
 6 8 and 9 *Ember.*
 10 *Trinity Sunday.*
 Princess Amelia b. 1711.
 11 *Trinity Monday.*
 Barnabas.
 Trin. Col. Elect. 1 ret.
 12 *Trinity Tuesday.*
 13 Oxf. and Camb. Ter. beg.
 14 Corpus Christi.
 16 Sun and Clock. together.
 17 1 *Sund. aft. Trin.*
 St. Alban. 2 ret.
 20 Transl. Ed. K. West Sax.
 22 King GEORGE II. Inaug.
 Longest Day.
 24 2 *Sund. aft. Trin.* 3 ret.
 St. John Baptist *
 SECOND QUARTER DAY.
 25 St. John's Coll. Election.
 26 K. GEORGE II. *procl.*
 29 St. Peter*.

- 30 Buck Hunting comes in,
 and continues till Holy
 Rood. Ex. Col. Elect.

JULY xxxi Days.

- 1 3 *Sund. aft. Trin.* 4 ret.
 2 Visitation Virg. Mary.
 3 Dies Comitor.
 Cambr. Commenc. first
 Tuesday of July.
 4 Transl. St. Martin.
 5 Old Midsummer Day.
 7 Thomas à Becket.
 8 4 *Sund. aft. Trin.*
 10 Oxford Act 7 Days from
 Camb. Commence. inclu.
 15 5 *Sunday aft. Trin.*
 Swithun.
 20 Margaret.
 22 6 *Sund. after Trin.*
 Mary Magdalen.
 24 Magdalen Coll. Elect.
 25 St. James*.
 26 St. Anne.
 29 7 *Sunday aft. Trin.*
 30 Dog Days beg. *Scrin*
 rises with the Sun

AUGUST xxxi Days.

- 1 Lamas Day.
 5 8 *Sund. aft. Easter.*
 6 Transfiguration.
 7 Name of Jesus.
 10 St. Lawrence.
 11 Princess Augusta born, 1737
 12 9 *Sunday after Trin.*
 15 Assumption.
 19 10 *Sund. aft. Trin.*
 21 Athanasius.
 24 St. Bartholomew.
 26 11 *Sunday aft. Trin.*
 28 St. Austin.
 29 Beheading St. John the
 Baptist.
 30 Sun and Clocks together.

SEPTEMBER xxx Days.

- 1 Giles.
 2 12 *Sund. aft. Trin.*
 London burnt, 1666. O.S.
 7 Eunuchus.

8 Nativity of the Blef.
Virgin Mary.

6 13 *Sund. of Trin.*

Dog Days end. *Canis Ma-*
ior rises at 3 Morn.

14 Exaltation of the Crofs,
or Holy Crofs Day.

17 14 *Sunday after Trinity.*
Lambert.

17 21 and 22 Ember.

21 *St. Matthew.*

22 Equal Day and Night in
all the World.

15 *Sunday after Trinity.*

26 Cyprian.

28 Sheriffs of London sworn.

29 *St. Michael.* THIRD
QUARTER-DAY.

Hare Hunting comes in
and lasts till the End of
February.

16 *Sun. aft. Tr.* Jerom.

OCTOBER xxxi Days.

1 Remigius B. Rhemes.

6 *St. Faith.*

17 *Sunday after Trinity.*

9 *St. Dennis.*

10 Old Michaelmas-day.

Oxf. & Cam. Terms b.

13 *Transl. K. Edw. Conf.*

18 *Sunday after Trinity.*

17 Etheldred Virg.

18 *St. Luke.*

19 *Sunday after Trinity.*

22 *K. Ge. II. crown'd 1727.*

25 *St. Crispin.*

20 *Sunday after Trinity.*

*St. Simon and Jude.**

NOVEMBER xxx Days.

1 *All Saints.**

2 *All Souls.*

3 *All Souls Col. Election.*

Cras Anim. 1 ret.

21 *Sunday after Trinity.*

King William born.

Powder-plot. 1605, O.S.

6 *Leonard. Mic. Term beg.*

7 *Pr. Henry-Fred. b. 1745.*

9 *K. Geo. II. b. 1683, N.S.*

Ld. Mayor's Day, Lond.

10 *K. Ge. II. Birth-day kept.*

11 22 *S. aft. Tr.* *St. Martin.*

12 *Cras Mart. 2 ret.*

13 *Britius.*

15 *Machutus.*

17 *Hugh. Anniv. of Queen*

Eliz. Procl. 1558.

18 23 *Sun. after Tr.* 3 ret.

20 *Edmund King and Mart.*

22 *St. Cecilia. Old Martin-*
mas day.

23 *St. Clement;*

25 24 *Sund. af. Tr.* *Quind.*

Mart. 4 ret. Catherine.

Pr. Will. Henry b. 1743.

28 *Michaelmas Term ends.*

29 *Baliol College Election.*

30 *St. Andrew.* Prŷŷe Dow.*

of Wales b. 1719.

Anniversary Meeting of

Royal Society.

DECEMBER xxxi Days.

2 *Advent Sunday.*

4 *Barbary.*

6 *Nicholas.*

8 *Conception of B. V. M.*

9 1 *Sunday after Advent.*

13 *Lucy.*

16 2 *Sunday after Advent.*

O Sapientia.

17 *Oxf. & Cam. Terms end.*

18 *Princess Louisa, Queen of*

Denmark born, 1724.

19, 21 and 22 *Ember.*

21 *St. Thomas.* Shortest day.*

23 3 *Sunday after Advent.*

Sun and Clocks together.

25 *Christmas day.* 4th Quar-*

ter-day. Fox Hunting

comes in and lasts till

Lady-day.

26 *St. Stephen.*

27 *St. John the Evangelist.*

28 *Holy Innocents.*

30 1 *Sunday after Christ.*

31 *Sylvester B. of Rome.*

Hundreds of Years.			
100	200	300	400
500	600	700	800
900	1000	1100	1200
1300	1400	1500	1600
1700	1800	1900	2000
2100	2200	2300	2400
2500	2600	2700	2800
2900	3000	3100	3200
3300	3400	3500	3600
3700	3800	3900	4000
4100	4200	4300	4400
Ys ab. Hds.	C	E	G BA
129	5785	B	D F G
230	5886	A	C E F
331	5987	G	B D E
432	6088	FE	AG CB DC
533	6189	D	F A B
634	6290	C	E G A
735	6391	B	D F G
836	6492	AG	CB ED FE
937	6593	F	A C D
1038	6694	E	G B C
1139	6795	D	F A B
1240	6896	CB	ED GF AG
1341	6997	A	C E F
1442	7098	G	B D E
1543	7199	F	A C D
1644	72	ED	GF BA CB
1745	73	C	E G A
1846	74	B	D F G
1947	75	A	C E F
2048	76	GF	BA DC ED
2149	77	E	G B C
2250	78	D	F A B
2351	79	C	E G A
2452	80	BA	DC FE GF
2553	81	G	B D E
2654	82	F	A C D
2755	83	E	G B C
2856	84	DC	FE AG BA

USE. Under the Hundreds and against the odd Years stand the *Dominical Letter* or *Letters* for the Year required, N. S.

Example. Under 1700 and against 59 stands the *Dominical Letter* G. for 1759. So for the Rest.

N. B. The *Dominical Letter* for even Hundreds stands under those *Hundreds*, N. Style.

A PERPETUAL DIARY; shewing by the *Dominical Letter*, for Year, the Day of the Week respondent to any Day of Month, that Year, past, sent, or to come, either according to NEW or OLD STYLE.

Months.	A	B	C	D	E	F
January, Octo.	D	E	F	G	A	B
Feb. Mar. Nov.	G	A	B	C	D	E
April, July	B	C	D	E	F	G
May.	E	F	G	A	B	C
June	C	D	E	F	G	A
August	F	G	A	B	C	D
Sept. Dec.	I	2	3	4	5	6
	8	9	10	11	12	13
Days of the Month correspondent to the 7 Week - Day	14	15	16	17	18	19
Columns in order of Succession, from the Sunday Col.	20	21	22	23	24	25
	26	27	28	29	30	31

EXAMPLE. To find on what day of the Week the 27th of July pens, 1759, N. S. the *Dominical Letter* being G for that Year.

To the Right of the Month find the *Dominical Letter*, G, which, at the Bottom, is the Sunday Column, wherein stand 1, 8, 15, 22, 29 all the *Sundays* in that Month reckoning forward to the Right, the Column *Monday*, the next to that day, &c. round the 7 Columns from Sunday Column, 27 will be found in Friday Column, the Week-day required.

N. B. The *Dominical Letter* Old Style is used in the same Manner and is found, for ever, by adding Complement to next Sevens of Dif. of Styles, to the Letters Past for N. S. rejecting 7.

* A. B. C. D. E. F. G.
1. 2. 3. 4. 5. 6. 7.
C. 7

Com. 11 to 14. 3

rej. 7. . . 3 C, for O. S.

AL EPHEMERIDES, 1759, N. S. For Greenwich Observatory.

LUNATIONS, OF NEW, FULL, and QUARTER MOONS.

January.	D.	February.	D.	March.	D.	April.
h m		h m		h m		h m
f.q. 3 13m.	4	f.q. 11 45m.	5	f.q. 10 21n.	4	f.q. 10 54m.
f.m. 8 7m.	12	f.m. 1 35m.	13	f.m. 7 33n.	12	f.m. 0 59a.
l.q. 10 33m.	20	l.q. 5 37m.	21	l.q. 9 28n.	20	l.q. 9 20m.
n.m. 8 3n.	27	n.m. 6 56m.	28	n.m. 4 8a.	27	n.m. 0 24m.
May.	D.	June.	D.	July.	D.	August.
h m		h m		h m		h m
f.q. 1 17m.	2	f.q. 4 57a.	2	f.q. 9 24m.	1	f.q. 2 28m.
f.m. 4 39m.	10	f.m. 6 19a.	10	f.m. 5 52m.	8	f.m. 3 49a.
l.q. 5 33a.	17	l.q. 11 on.	17	l.q. 3 25m.	15	l.q. 8 25m.
n.m. 8 34m.	24	n.m. 5 27a.	24	n.m. 3 56m.	22	n.m. 4 39a.
					30	f.q. 7 10n.
September.	D.	October.	D.	November.	D.	December.
h m		h m		h m		h m.
f.m. 0 39m.	6	f.m. 9 29m.	4	f.m. 6 44a.	4	f.m. 5 2m.
l.q. 3 28a.	13	l.q. 2 10m.	11	l.q. 4 11a.	11	l.q. 9 39m.
n.m. 7 45m.	21	n.m. 1 om.	19	n.m. 7 35a.	19	n.m. 1 56a.
f.q. 11 56m.	29	f.q. 1 53m.	27	f.q. 7 25a.	26	f.q. 11 21n.

CONJUNCTIONS of the MOON with the 5 PLANETS.

January.	D.	February.	D.	March.	D.	April.	D.	May.	D.	June.
h		h		h		h		h		h
11 n 23	u ♀ 1 a	23 u ♀ 6m	19 u ♀ 7 a	17 u ♀ 2m	13 u ♀ 3m					
5 a 25	u ♀ 1 a	26 u ♀ 10 n	25 u ♂ 12 n	20 u ♀ 10 n	17 u ♀ 5m					
4 a 28	u ♀ 2m	28 u ♂ 3m	28 u ♀ 11m	24 u ♂ 9 n	23 u ♀ 6m					
3m		20 u ♀ 11 n	0 ♀ 9 n	25 u ♂ 2 a	22 u ♂ 4 a					
4m				28 u ♀ 9 n	27 u ♀ 12 n					
noon										
July.	D.	August.	D.	September.	D.	October.	D.	November.	D.	December.
h		h		h		h		h		h
6m	6 u ♀ 10m	2 u ♀ 4 a	4 u ♀ 6m	12 u ♂ 7 a	11 u ♂ 3m					
10m	10 u ♀ 4 a	6 u ♀ 10 n	14 u ♂ 6m	17 u ♀ 9m	15 u ♀ 2 a					
5m	17 u ♂ 12 n	16 u ♂ 4 a	20 u ♀ 2m	20 u ♂ 3 a	20 u ♀ 7m					
5m	25 u ♂ 2m	21 u ♂ 4m	22 u ♀ 3m	24 u ♀ 5m	21 u ♀ 9 a					
11 n 26	u ♀ 7 a	24 u ♀ 8 n	27 u ♀ 2 a	27 u ♀ 9 a	24 u ♀ 6m					

EXPLANATION of the CHARACTERS.

New Moon, ☉ f. m. Full Moon, ☾ h Saturn, ☿ Mars, ♀ Venus,
 First Quarter, ☾ l. q. Last Quarter, ☾ u Jupiter, ☉ Sun, ☿ Mercury.
 ☾ u. under, o. over, a Planet.

☾ joined with any Planet or Planets, signifies that the Moon is that
 with that Planet or those Planets, as may sometimes be seen by the naked
 eye and will afford Pleasure to those who have good Glasses to observe them.

COELESTIAL PHENOMENA and OBSERVATIONS, for
1759, N. S. For Greenwich Observatory.

D.	January.	D.	February.	D.	March.
4	☾ Per. in 27° 48'	3	☉ Syrius at 9 ^h 17 ^m N.	9	☾ in Nebul. ☽
11	☿ Perihelion [44'	5	☾ * = ☿, Bayer	13	☾ in ☿
12	☾ * μ II, Bayer	8	☾ * δ II	14	☾ ♀ dist. 31'
13	☾ * Ω II.	14	☾ Ap. in 2° 20'	15	☾ Ap. 5° 24'
18	☾ ecl'd. 8 M.	15	☾ ♀ Dist. 8'	16	☾ * ☿ Orion at 5 ^h 39 ^m
20	☾ Ap. 29° 16'	18	☉ in ☿, at 8 ^h 49 ^m	18	☉ * ☿ Orion at 5 ^h 39 ^m
20	☿ in Aphelion	19	☉ ♂	18	☿ * e ☿ dist. 14'
23	☉ in Tail of Whale 4 ^h A.	20	☿ in Perih.	19	☾ * ♂
30	☾ * η ☽, Bayer	23	☉ Virg. Back at 2 ^h 39 ^m M.	20	☉ * ☿ Orion at 5 ^h 15 ^m
31	☿ ♀ dist. 13'	24	☿ in Aphel.	22	☉ in ☿, 9 ^h 24 ^m A.
	☿ in mean Dist.	25	☉ ♀	22	☿ * ☿ dist. 38'
	☾ Per. 0° ☿ 48'	26	☉ ♂	28	☿ in mean Dist.
		28	☉ Rigel at 6 ^h 16 ^m A.	28	☾ Per. 6° ☿ 56'
			☉ Per. 3° ☿ 52'		
D.	April.	D.	May.	D.	June.
2	☾ * ζ ☿	1	☾ * II	4	☾ Ap. 14° 37'
3	☾ * ε ☽ dist. 1'	2	☾ ♀ ☽ dist. 42'	6	☿ ♂ dist. 3° 50'
4	☉ Procyon, at 6 ^h 23 ^m A.	3	☿ τ ☿ dist. 15'	8	☿ * II dist. 1'
6	☾ in Nebul. ☽ at 1 ^h M.	8	☉ in Lion's Tail at 8 ^h 46 ^m	10	☾ ☽
8	☿ * o ☿ dist. 29'	12	☉ in ☽ of ♂	16	☿ * II dist. 35'
10	☉ in * α Orion at 4 ^h 25 ^m A.	15	☾ Ap. in 11° 32'	18	☿ * ☽ dist. 26'
11	☿ Perihel.	21	☿ Perih.	18	☿ near Nebul. of ☽
20	☉ in Eagle at 6 ^h 12 ^m M.	22	☉ * of Coachman dist. 19'	24	☿ * ☿ dist. 2'
24	☉ in ☿ 10 ^h 24 ^m	23	☉ in II at 11 ^h 13 ^m M.	29	☿ in mean dist.
25	☉ in Regulus at 7 ^h 39 ^m	25	☉ in Arctur. at 10 ^h N.	31	☉ in ☽ 8 ^h 5 ^m N.
28	☾ Per. 10° ☿ 0'	31	☾ Per. 13° ☿ 5'		Sun eclipsed in Southern Hemisphere.
29	☿ A ☿ dist. 36'		☿ Aphelion.		☉ in ☽ of ☿
	☿ in mean dist.		☿ * II dist. 19'		☉ Ap. 1 ^h 16 ^m M.
	☿ * ☿ dist. 13' and 18'		☿ m II dist. 10'		

CELESTIAL PHENOMENA and OBSERVATIONS, &c.
CONTINUED.

July.	August.	September.
1 ♀ in ☿ 2 ♀ Perih. 3 ☉ 24 4 ☉ in ☿ of ♄ 5 ♀ Per. 19° 14' 6 ♀ * ♄ dist. 30' 7 ♀ * ♄ dist. 31' 8 ☉ in Arctur. at 5 ^h 52 ^m 9 ☉ in ☿ 7 ^h m. 10 ☉ in mean Dist. 11 ♀ * ♄ dist. 58' 12 ♀ in mean Dist. 13 ♀ Ap. in 20° 45' 14 ♀ * ♄ dist. 50' 15 ♀ * ♄ dist. 41'	1 ♀ in ☿ 2 ♀ Per. 22° 17' 3 ♀ f ♄ dist. 23' 4 ♀ * ♄ dist. 17' 5 ☉ in Markab at 1 ^h 3 ^m M. 6 ☉ in Algenib at 2 ^h 7 ^m M. 7 ☉ Aphelion 8 ♀ * ♄ dist. 2' 9 ☉ in ♄ 1 ^h 16 ^m A. 10 ☉ * ♄ dist. 24' 11 ♄ * ♄ dist. 41' 12 ♀ * ♄ dist. 8' 13 ♀ Ap. 23° 49' 14 ♀ * ♄ dist. 1' 15 ♀ * ♄ dist. 42' 16 ♀ * ♄ dist. 24'	1 ♀ in Aph. 2 ☉ in Eagle at 8 ^h 48 ^m N. 3 ☉ in * Orion at 6 ^h 42 ^m M. 4 ♀ * ♄ dist. 48' 5 ☉ ♄ 6 ♀ * ♄ dist. 13' 7 ☉ in Procyon, at 8 ^h 11 ^m M. 8 ♀ Per. 25° 21' 9 H II 10 ♀ in mean D. st. 11 ♂ in Nebul. ☿ 12 ☉ in 9 ^h 30 ^m M. 13 ♀ Ap. 26° 53' 14 ☉ in ♂ Orion at 5 ^h 9 ^m M. 15 ☉ in * Orion 5 ^h 1 ^m M. [12' 16 ♄ h ~~~ dist. 30' & 17 ☉ in ♂ Orion 5 ^h M
October.	November.	December.
1 ♀ Perihelion 2 ♀ Perig. 28° 26' 3 ♄ * ♄ 4 ☉ Rigel at 3 ^h 31 ^m M. 5 ♀ Ap. 29° 58' 6 ☉ in mean Dist. 7 ☉ in ♄ at 5 ^h 22 ^m A. 8 ♀ inferior. 9 ♄ * ♄ dist. 36' 10 ♀ ♄	1 ♀ Per. 1° 30' 2 ☉ ♀ Superior 3 ♄ * ♄ 4 H & * II 5 ☉ in Sirius, at 3 ^h 33 ^m M. 6 ☉ in ☿ of ♄ 7 ♀ in Aphelion 8 ♀ Ap. 3° 2' 9 ☉ in Tail of Whale at 8 ^h 47 ^m A. 10 ☉ in ♄ 1 ^h 8 ^m A. 11 ♀ in her ☿	1 ♀ Per. 4° 35' 2 ♄ * ♄ Immer. at 5 ^h 1 ^m Emer. at 7 ^h 38 ^m the Center more South 12' 3 H II 4 ♄ * ♄ dist. 39' 5 ♄ Ap. 6° 4' 6 ☉ eclipsed betw. the 2 Tropics 7 ☉ in ♄ 1 ^h 22 ^m 8 ♀ Perih. 9 ♄ * ♄ dist. 8' 10 ♄ h ~~~ dist. 0' 11 ♄ Per. 7° 39' 12 ☉ in ☿ of ♄ 13 ♀ in Per. 14 ☉ Per. at 4 ^h 24 ^m 15 ♄ * ♄ dist. 52'

Correct Times of the ECLIPSES of the first SATELLITE of JUPITER
for 1759, N. S. for Greenwich Observatory.

January.				February.				March.				April.				May.			
Immer.				Immer.				Immer.				Immer.				Immer.			
D.	h	m	s	D.	h	m	s	D.	h	m	s	D.	h	m	s	D.	h	m	s
12	10	1	33	2	15	36	40	1	4	43	43	2	1	21	49	2	3	29	48
14	4	29	21	4	10	5	22	2	23	12	23	3	19	50	38	3	21	53	21
15	22	57	11	6	4	33	36	4	17	41	8	5	14	19	26	5	16	26	52
17	17	25	2	7	23	1	53	6	12	9	52	7	8	48	14	7	10	55	22
19	11	52	45	9	17	30	11	8	6	38	36	9	3	17	1	9	5	23	50
21	6	20	50	11	11	58	31	10	1	7	21	10	21	45	47	10	23	52	16
22	14	48	47	13	6	26	53	11	19	36	6	12	16	14	32	12	18	21	40
24	19	16	45	15	0	55	16	13	14	4	52	14	10	43	16	14	12	49	2
26	13	44	45	16	19	23	4	15	8	33	38	16	5	11	56	16	7	17	23
28	8	12	48	18	13	51	9	17	3	2	25	18	23	41	42	18	1	45	42
30	2	40	53	20	8	20	39	18	21	31	13	19	18	9	22	19	20	14	0
31	21	9	0	22	2	49	11	20	16	0	1	21	12	38	5	21	14	42	17
				23	21	17	46	22	10	28	50	23	7	6	4	23	9	10	33
				25	15	46	23	24	4	57	40	25	1	35	22	25	3	38	48
				27	10	15	2	25	23	26	30	26	20	4	2	6	22	7	126
								27	17	55	20	28	14	32	39	28	16	35	13
								29	12	24	10	30	9	1	14	30	11	3	25
								31	6	53	0								

July.				August.				September.				October.				November.			
Immer.				Emerfions				Emerfions				Emerfions				Emerfions			
D.	h	m	s	D.	h	m	s	D.	h	m	s	D.	h	m	s	D.	h	m	s
1	7	29	45	2	6	17	59	1	8	33	41	1	10	54	45	2	7	41	18
3	1	57	57	4	0	46	51	3	3	3	5	3	5	24	12	4	2	10	12
4	20	26	10	5	19	15	45	4	21	32	30	4	23	53	38	5	20	39	4
6	14	54	24	7	13	44	41	6	16	1	55	6	18	23	4	7	15	7	53
8	9	22	40	9	8	13	39	8	10	31	21	8	12	52	29	9	9	36	40
	Emerfions			11	2	42	39	10	5	0	48	10	7	21	53	11	4	4	2
10	6	6	0	12	21	11	42	11	23	30	16	12	1	51	16	12	22	34	8
12	0	14	22	14	15	40	48	13	17	59	45	13	20	20	38	14	17	2	49
13	19	2	46	16	16	9	58	15	12	29	16	15	14	49	58	16	11	31	27
15	31	31	13	18	4	39	11	17	6	58	48	17	9	19	16	18	6	0	3
17	7	59	43	19	23	8	26	19	1	28	20	19	3	48	32	20	0	28	35
19	2	28	16	21	17	37	42	20	19	57	51	20	22	17	46	21	18	57	22
20	20	56	51	23	12	6	59	22	14	27	22	22	16	46	59	23	13	25	25
22	15	25	29	25	6	36	17	24	8	56	52	24	11	16	9	25	7	53	44
24	9	54	9	27	1	5	36	26	3	26	21	26	5	45	16	27	2	22	127
26	4	22	51	28	19	34	56	27	21	55	50	28	0	14	21	28	20	50	16
27	22	51	35	30	14	4	18	29	16	25	18	29	18	43	23	30	15	18	29
29	17	20	21									31	13	12	22				
31	11	49	9																

N. B. The Asterisk * is placed against those Eclipses of the 1st Satellite
at Greenwich Observatory.

Of the COMET that appeared in 1682, and was expected to return in 1758: Its PERIOD being about 75 and 76 Julian Years, alternately. *and will appear in 1833 -*

The PLACES computed according to THEORY, compared with FLAMSTEED'S Observations thereof.

1682. App. Time.	Sun's Place.	Comet's Long. Comp.	Lat. North Comp.	Com. Long. Observed.	Lat. North Observed.	Differ. Long.	Differ. Latitude.
d h m	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	′ ″	′ ″
Aug. 19 16 38	m 7 0 7	18 14 28	25 30 7	18 14 40	25 49 55	—	—
20 15 38	7 55 52	24 46 23	26 14 42	24 16 22	26 12 52	+	+
21 8 21	8 36 14	29 37 15	26 20 3	29 38	26 17 37	—	—
22 8 8	9 33 55	6 29 59	26 8 42	m 6 30	26 7 12	—	—
29 8 20	16 22 40	12 37 54	18 37 47	± 2 37 49	18 34 5	+	+
30 7 45	17 19 41	15 16 1	17 26 43	15 35	18 17 27	+	+
Sep. 4 7 33	19 16 5	20 30 53	15 13 0	20 27	415 9 49	+	+
5 7 22	22 11 28	25 42 6	12 23 48	25 40	58 12 22	+	+
5 7 32	23 10 20	27 0 46	11 33 8	26 59	24 11 33	+	+
8 7 16	26 5 58	29 58 44	9 26 41	29 58	45 9 26 43	—	—
9 7 26	27 5 9	0 41 10	8 49 10	m 0 44	4 8 48 25	+	+

In the above Table, the *Theory of Comets* is found to correspond as nearly with Observations, as the *Theory of the Planets*.

In the above Table, the Theory of Comets is found to correspond as nearly with Observations, as the Theory of the Planets.

602
70
1750
75
1833

THE alternate Period of 76 Years of this Comet will be finished in September, 1758; for, at its last Return, it was in Perihelion, or nearest Distance to the Sun, on September 4^d 7^h 39^m in the Year 1682, when its Period was reckoned but 75 Years: its

Its former *Perihelion* being *October 16^d 3^h 50^m Afternoon*, in the Year 1607.

It being now the 20th of *August*, and no Comet has yet appeared, if it does not appear before the Expiration of *September 1758*, (the first of its former Appearance being in *August 1682*) it may thence be concluded, *that the Theory of Comets remains yet imperfect, and that the Dimensions of their Orbits (on Account of their vast Excentricities, and exceeding slow Motions, in the Aphelions of those Orbits) have not yet been correctly determined (See Palladium, 1758, p. 56.)* The *Perihelion Distance* of this Comet, at its last Appearance was found to be 58;3 Parts of 100000 the Radius of the Earth's Orbit.

And therefore, by Means of this *Theory*, so far as it is improved, the several Species of the Orbits of Comets, and the respective Times of their periodic Revolutions may be nearly determined.

The *retrograde Comet*, which appeared in the Year 1607, described an Orbit, whose ascending *Node* was in $8^{\circ} 20' 21''$, the *Inclination* of its Orbit to the Plane of the *Ecliptic* was $17^{\circ} 21'$, whose *Perihelion* was in $20^{\circ} 26'$, its *Perihelion Distance* a 58680 Parts of 100000, the Radius of the Earth's Orbit (its Time of *Perihelions* being *October 16^d 3^h 50^m*) agreeing, very nearly, with the Orbit of the Comet seen in 1682. If which were not two different Comets, but one and the same Comet, it will finish its Revolution in about 75 Years. The greater Axis of which Orbit, to the greater Axis of the Earth's Orbit is as $75 \times 75^{\frac{1}{2}}$ to 1, or as 1778 to 100 nearly; whose *Aphelion Distance* from the Sun, to the mean Distance of the Earth from the Sun about 35 to 1; from whence its *elliptic Orbit* may be determined; supposing the Revolution in 75 Years.

But, by the great Number of Comets, and the great Distance of their *Aphelions* from the Sun, and the Slowness of their Motion in those extreme Parts of their Orbits, they will, by their mutual Gravitations, disturb one another; so that their *Eccentricities* and Times of their *Revolutions*, will be sometimes a little encreased, and sometimes a little diminished.

Therefore, the same Comet will not exactly return in the same Orbit, nor in the same periodic Times—and there may be greater Changes than what arise from these Causes.

Comets attracted nearer and nearer to the Sun, in every Revolution must suffer some Resistance and Retardation from the Sun's Atmosphere, and will at last fall down upon his Body. And in their remote *Aphelions*, where their Motion is slower, Comets may be further retarded by the Attraction of other Comets; in Consequence of which they may descend directly to the Sun, and so supply his exhausted Fuel.

The Fixed Stars, being so many Suns to different Systems of Planets, moving respectively round them, having been gradually wasted by the Light and Vapour emitted from them, for a long Time, may be recruited by Comets descending to them.

having done their other Offices in the Heavens. And, from this fresh Supply of Fuel, *old Stars* acquiring fresh Splendor, may pass for new Stars. Of which Kind are such fixed Stars, as appear with sudden and wonderful Brightness and then vanish out of Sight, in the Heavens, gradually.

The Vapours which arise from the Sun and fixed Stars and the Tails of the Comets, may, at last, meet with and fall into the Atmosphere of the Planets, by Attraction, and there be condensed and turned into Water and humid Spirits, and from thence, by a slow Heat, gradually pass into the Form of Salts, Sulphurs, and Tinctures, and Mud, and Clay, and Sand, and Stones, and Coral, and other terrestrial Substances. See *Principia B. III. Prop. XLII.*

From what has here been observed concerning the Theory and Motion of Comets, if the Comet expected before, or in, September 1758, does not return in that Time, it probably has suffered a Change in its Orbit, by the casual Attraction of other Comets, passing near it; or may return invisible, when the Earth is in the opposite Part of her Orbit. (See the Rev. Mr. Bolton's Account of a Comet, and its invisible Return, further on.)

That the Reader may not be surpris'd at the falling of a Comet upon the Sun's Surface, after having done its other Offices in the Heavens, there must be some such Means for the Supply of the Sun's continually exhausted Substance. For, as all the planetary Bodies revolving round him are supplied by vast Quantities of his elementary Substance, dispersed throughout the whole visible Solar System, and (as before observ'd) are thereby augmented, by their several Attractions, from his Substance, it seems as natural for all the revolving Planets to finish their Periods, by falling upon the Sun's Body, (being the next largest Mass) as for the Bodies of all the Plants and Animals, to terminate by falling into their Mother Substance, the Earth, (the next largest Mass to them) from whence they derived their Bulk and Support. Thus all Detachments return to the Army, or Corps to which they belong.

The Earth, we may observe, is furnished with several Kinds of combustible Matter ready for kindling, whenever a sufficient Cause shall introduce a Change in its Orbit, to carry it near the Sun, for taking Fire, and then may convey its Heat, as a Comet, to remote Regions, in the last Vicissitude of its Duration.

The planetary Bodies seem to be designed as Nurseries to their respective Inhabitants, for a superior Order of Beings. After which Use, they seem fitted for the Purpose of Comets, by a Change of their Orbits.

By the nearer and nearer Coincidence of the planetary Orbits with the Plane of the *Ecliptic*, a Period of this System of Planets seems to be demonstrable and inevitable from natural Causes, (at the same Time we have it revealed) though Sir Isaac Newton has proved, by *Prop. X. B. III. That the Motions of the Planets in the Heavens may subsist an exceeding long Time*: That is, for an immense Tract of Time; in regard of the Medium in which they now circulate, tending very little to destroy or hinder their Motion, by Resistance.

N. B. The Observations marked with * were made at Greenwich ; the Rest at Oxford and Sherburne-Castle ; except the 1st made at Paris, 13 Days before this Comet was seen in England.

The Author of the above Calculation takes Notice of the wonderful Agreement there is between the Rev. Mr. Betts's Calculation, and the Observations made at Oxford and Sherburne, of the same Comet ; which Agreement excited him to spare no Pains to bring his long and tedious Computations to the above successful Issue ; who declined prosecuting the Paris Observations by Cassini (as he at first proposed) through the Sufficiency and Accuracy he found in the Calculations above. He farther observes, That Mr. Betts says, on January 23 the apparent Diameter of the Nucleus of this Comet was nearly equal to that of Jupiter, by which its real Magnitude is found to be 5,816 Times greater than our Earth.

On February 13, 1743-4, the Extremity of this Comet's Tail, according to Dr. Bolton, reached, nearly, the Stars in the Wing of Pegasus marked τ and υ , by which its Deviation was found to be $37^{\circ} 17'$, and the Length of the Tail 24,766,628 Miles. The Vapour he found took up $9^d 16^h 31^m$, accurately, in ascending from the Head to the Extremity of the Tail ; which at the Rate of 106515 Miles in an Hour, uniform Velocity.

If the periodic Time of 310 Years be true, (referred to Hevelius's Cometography) then the COMET made its Return at the End of the Years 1433, 1123, 813, 503, &c. or at the Beginning of the Years 1434, 1124, 814, 504, &c.

In the Year 1433, there appeared a Comet, of which Hevelius calls it "*Mensibus tribus*"—a *Vespere ad Auroram*—*Rutilans, Lucidus & Maximus*.

In the Year 814, a Comet appeared, of which Hevelius says, "*November singularis et terribilis, Luce et Specie mirabili similis duplici Luna, perspicue concurrenti et discendenti, et inter alia, Simulacrum Hominis sine Capite exhibens.*" — But others say, at the latter End of the Year 813.

In the Year 504, a Comet appeared, of which Hevelius says, "*Complures Noctes—Cauda longissima, una cum Draconis Effigie commixta et ardente.*" — *Sub Tempore quo Ambrosius Aurelius Rex Britanniae Vita excessit.*"

In the Year 1124, there is no Mention of a Comet in Hevelius. But Labienicius says, "*Anno Christi 1125, Stella crinita apparuit,*" which might be 1124, since the Chronology of those Times is so very deficient : For an Account of the same Event by different Authors, is sometimes found to differ two or three Years — However a Comet may return and yet not be visible. Had our Earth been in the opposite Part of its Orbit, when this Comet returned, its Distance from us had been so great, that its Nucleus would have subtended no sensible Angle ; and scarce any Comet can be seen at a Dist. greater than the Sem.Diam. and half of $\odot$'s Orbit. The Tail of the Comet, situated in the opposite Part of the Earth's Orbit, would project towards or into its Head. — When it approached its Perihelion it would set heliacally ; or, if in the

the Summer Season it returned in this Manner, the Twiligh being then so great, would render not only the Tail, but the Head of the COMET invisible, at so great a Distance.

Three ECLIPSES; 1 of the MOON and 2 of the SUN
1759. By the AUTHOR.

I. Of the MOON January 13.

	h	m	s	
Beginning	6	29	40	} Greenwich Observatory. Morn. app. Time. ☉ rises 7 ^h 53 ^m .
Middle	7	59	10	
End	9	28	40	
Duration	2	59	0	
Digits	5	50'		on Moon's Southern Limb.

II. Of the Sun, June 24, visible in the extreme Southern Part of Africa. Middle between 5 and 6 in the Afternoon, London, invisible; the Moon's Shadow being thrown on other Parts of the Earth.

III. Of the Sun, December 19, visible in Africa, and extreme Southern Parts of Europe. Middle about Half an Hour after 2 in the Afternoon, invisible at London: the Moon's Shadow being projected towards other Parts of the Earth.

☞ The Military Matter, and New Astronomical Tables with the other Part of the Ephemerides we had computed, which will otherwise next Year.

NEW ÆNIGMAS. [Suffe]

I. ÆNIGMA 97. By Mr. Christopher Malon, of Eastbury

LET subtle *Sphinx* her Sophistry expose,
And *Oedipus* her latent Craft disclose;
To prying *Sophis*, I here my Name propound,
To urge their *Wit*, and not their Thoughts confound:
I give *shrewd Hints* that may impart the same,
Nor baulk the Reader, nor incur his Blame.

Min'rals, and *Plants*, and *Quadrupeds* produce
Subservient Matter to my Form and Use;
By diff'rent Means, and Dint of diff'rent Arts,
And one *Contriver* who compose my Parts,
I'm fram'd for Use, or Pleasure, or for War,
The *Prince*, and *Peer*, and *Peasant* me prefer.
To Mode and Motion I am not confin'd,
I vary with the various Turns of Mind.

Sometimes I skim it o'er the verdant Plain,
As often Bustle in the fierce Campaign;
I've four Supporters, yet I two support,
Who twist my Arms: For I was made for Sport.
A *Dupe* to *Caprice*, I to *Humour* suit,
And *Barrier* am betwixt the *Man* and *Brute*.
But, when with *Fitness* we do not comply,
Quarrels ensue, with galling Hip and Thigh.
Yet strange to see th' Occurrences that pass,
Sometimes I'm jumbled 'twixt the *Mule* and *Ass*:
And let not C---olds by the World be scorn'd,
When *Ladies* ride triumphant I am born'd.

II. ÆNIGMA 98. By HONORIUS.

To Dignities and Drudgery I'm a Slave,
 Both Court and Country my Assistance have ;
 Princes and Peers, in dignified Array,
 In pompous Pageantry my Pride display.
 Peasants for Gain oft wreck me to their Will,
 A Slave to Slaves, I help the Glebe to till.
 Or trudge along the doleful dirty Road,
 And toil and tug at the unweildly Load.
 The *Fop*, the *Beau*, *Coquette* and *Prude* I serve,
 Each use me as they think I do deserve.
 And as the *dead* are mounted Shoulder high,
 So, in my *Function*, to be brief, am I.
 But unconfin'd to either Dress or Shape,
 Just like Mankind, I different *Modes* do ape.
 Besides my *Mode*, I diff'rent *Values* bear,
 Am served, and serve, as plainly will appear :
 An Epithet's *prefixed* to my Name,
 Sometimes *annex'd*—*Ladies unfold the same*.

III. ÆNIGMA 99. By Miss NANNY COLLINS.

THERE are *nine* Brethren of us dwell together,
 Who seldom stir Abroad but in fair Weather ;
 My *Size* is small, but such my *Virtues* are,
 Each Brother strives to get to me *most near*,
 And such fond *Tenderness* all have for me,
 That they wou'd always bear me Company.
O'er Hills and Dales, where e'er I take my Way,
They follow me that sometimes go astray.
 He that of me a gentle *Kiss* obtains,
 Occasion Shouts and Leaping o'er the Plains ;
 But, if one chance to lay his *Cheek* to mine,
 His *rival* Brothers all their *Fury* join :
 Who fly upon us with their utmost Rage,
And bang and beat us 'till we disingage.

N. B. The above has all the Properties of a good Enigma.

PRIZE ÆNIGMA. By Mr. CHRISTOPHER MASON, of Eastburn, Suffex.

Whoever sends an Answer before Candlemas next, will be entitled, by Lot, to 4, 3, and 2 Palladiums equal in Value to 8, 6, and 4 Ladies Diaries, to be delivered for this Use, in London.

I'M grown familiar both with *Man* and *Brute*,
 And deal with each as Circumstances suit ;
 My *Shape* and *Substance* I'm asham'd to own,
But yet, in Yorkshire, I full well am known.
 Some I exalt from *abject low Degree*,
 And some I awe, and some are led by me.
 Sometimes a *Hero* merits my Reward,
 Tho' Fate, or Friends, that merit can retard.

My

My potent *Rival* robs on *Tower-Hill*,
 And *that* performs to which I'm destin'd *still*.
 Review the *Army* and the *Navy* see,
 Legions you'll find *Relations* are to me:
 But *reconnoitre* sacred *STEPHEN'S CELL*,
 Not *ONE* you'll find has therè deserv'd so well.
 My diff'rent *Posts* the *Reader* may admire,
 Sometimes I'm *Catch-pole* to a *Tit'lar Squire*,
Foibles and *Falsities* exalt my *Fame*,
Ner let each *FAIR ONE* blush to tell my *Name*.

The QUERIST.

NEW QUERIES.

I. QUERE 89. By Mr. JAMES CARTER, of *Clanfield*
near Bampton, Oxfordshire.

WHAT is the *Cause*, that in a *total Eclipse* of the *Moon*, the
 sometimes appears of a *reddish Colour*, in a *Manner* like *Blood*?

II. QUERE 90. By URANIA.

WHY have we more *Eclipses* of the *Sun* than of the *Moon*,
 and why more visible *Eclipses* of the *Moon*, than of the *Sun*?

III. QUERE 91. By NOVICUS.

WHETHER any other, or better *Distinction* of *Days* can be
 made than those of *natural* and *artificial* *Days*, denoting the
 Distance of *Time* from *Noon* to *Noon*, and from *Sun Rising* to
Setting: The foregoing *common Distinction*, having been objected
 to (by a *critical Observer*) as *improper*, or *inaccurate*?

IV. QUERE 92. By AMELIA.

WHAT is meant by the *Harvest Moon*? and how is this
 kind of *Moon* distinguished from the *Moons* at other *Seasons*?

V. QUERE 93. By G. BLAND Esq. of *Dublin*.

HOW is the *Proportion* of *dry Land* on the *Surface* of our
terraqueous Globe nearest determined to the *Surface* of *Water*?
 And what is that *Proportion*?

VI. QUERE 94. By CANTABRIGIENSIS.

WHY is the *red Coat* of *Arms*, fixed upon the *Iron Gate*
 in *Clare-Hall Walks*, in *Cambridge*, often mistaken for a *Brick*
House, at a much greater *Distance*?

VII. QUERE 95. By Mr. Puny, a *Student and Critic* of *Light*
 and *Darkness*, at *Chatham*, in *Kent*.

WHY do the planetary *Bodies* in the *Heavens*, appear bigger
 and less by *Turns*, being viewed through a *Telescope*? And
 there are *Stars* raying out *Darkness* as well as *Light*, (see *Spectator*)
 whether a white *Sheet* carried in the *Night* upon a *Hop-Pole*
 in the *Streets* of *Chatham*, will not make *Day* there, by re-
 flecting *Light*, as well as a *Black-Gown* carried by *Day* in the
 same *Manner*, will make *Night*, by reflecting *Darkness*. Why
 half *Crown* is invisible in a *Cup* or *Bason*, that is seen when *Water*
 is poured over it. And whether the shutting of a *Miller* and *Cann-*
ney-Sweeper (reflecting *white* and *black*) in and out of *Doors*,
 not the best Explanation of the *Theory* of *Light* and *Darkness*?

VIII. QUERE 96. *By* IRRADIATOR.

WHAT Number of Days would the Year contain if the Sun moved round the Earth, instead of the Earth moving round the Sun?

IX. QUERE 97. *By* Mr. Brown, of Oxford.

WHAT is the strongest *Proof* of the planetary Bodies of this *System*, besides our Earth, being inhabited?

X. QUERE 98. *By* HONESTUS.

WHY is *Honesty* reckoned the best Policy, when *Knaves* grow rich and thrive by *contrary* Measures; persisting in a constant Practice against an established Precept?

XI. QUERE 99. *By* Portius.

WHETHER a Breach of *Promise* may be construed a Breach of *Friendship*, or a Mark of Ungenerosity?

XII. QUERE 100. *By* Mæcenas.

UPON what Principle do the Favours and Affections of Mankind generally turn?

* * * * * *Whoever* sends the best Answer to the following Quere by Canilemas Day, has a Chance, by Lot, for 2 and 4 Palladiums (equal in Value to 4 and 8 Diaries) and will be delivered in London, according to Direction given.

PRIZE-QUERE. *By* Mr. CHR. MASON.

IN what Year of the Julian Period, and on what Day of the Month, and Week-Day, was CHRIST most probably born, of which there is a Dispute among Chronologists?

NEW QUESTIONS.

I. QUESTION 146. *By* Mr. THOMAS HUNTLEY.

AN antient *Castle*, on a Mountain's Brow,
It's Base deep fix'd commands the Plain below;
In this same Plain, a Hill it's Head displays,
On which a Battery we design to raise;
A Battery, that each flying Bomb, or Ball,
May strike the Summit of the Castle-Wall.

An Engineer, two Stations takes at Will,
Direct between the Castle and the Hill,
To these he views the Angles, * as Below,
From whence the just Direction he wou'd know;
That, by repeated Fires, the Balls may make
The solid STRUCTURE † to its Basis shake!

II. QUESTION 147. *By* Mr. CHR. MASON.

A Nobleman has purchased an Estate for 50,000l. Sterling, to be paid for in Weekly Payments, in 52 Weeks from the 1st Pay-

* At the 1st Station A, which lies nearest the Hill the $\angle$ of the Hill's Altitude was $8^{\circ} 40'$, and of the Castle's Altitude $13^{\circ} 40'$.
At Station B (1000 Feet Distance from A) the $\angle$ of the Hill's Altitude was $6^{\circ} 45'$; of the Castle's Altitude $17^{\circ} 0'$; and the greatest horizontal Ransom of the Piece 11640 Feet.

† Castle.

ment,

ment, and every Payment to be twice as much as the former Payment: *Required*, from thence, the Value of the first and last Payments?

III. QUESTION 148. By AMELIA.

TO find the Day of the *Week*, answerable to May 28 Days in the Year 585 before Christ, Julian Style, when an Eclipse of the Sun happened, that put an End to the Battle, and Peace concluded, between the Medes and Lydians? Required likewise, the Month-Day, at that Time, conformable to Gregorian Style reckoned back, with the Month-Day in the Egyptian Account correspondent, and the Number of the Epact, the respective Cycles of the Sun, Moon, and Indiction, and the Dominical Letters, conformable to both *N.* and *O.* Style, for that Year?

IV. Question 149. By Mr. George Stapley, of Scots-Hall near Rye.

IF the Year in which I was born be multiplied by my Age, and to that Product my Age be added, the Sum thereof will be 20464. *Quere* my Age?

V. QUESTION 150. By Mr. JAMES CARTER.

ON May 12th, 1757, the Sun's *Azimuth*, at Sea, was observed to be $77^{\circ} 20'$ from the South, and two Hours after his *Azimuth* was observed $46^{\circ} 15'$. *Quere* the Latitude North, and Times of the Observations?

VI. QUESTION 151. By URANIA.

THE Moon will pass the Meridian of Paris, 1759, Declination.

On Sept. 20^d 8^h 46^m } 23° S. 33' 2° 47' }
 21 9 38 } 20 46 }
 dif. } dif. }

Required from thence, the Time, at Boston, in New-England (Difference Longitude $71^{\circ} 10'$ West from Paris) when the Moon passes that Meridian, on January 8th, with her Declination and Place in the Ecliptic, at passing?

VII. QUESTION 152. By Mr. JOHN THOMAS, of Witherbridge, Leicestershire.

REQUIRED the Dimensions and Solidity of the greatest Cone, that can be inscribed in a Solid, generated by the Rotation of a Curve round its Axis, whose Abcissa is 50, bounding Ordinate 70, and Equation $px^3 = y^2$?

VIII. QUESTION 153. By Mr. WILLIAM ASHTON.

IF the Radius of a Circle inscribed in a right Angled Triangle be $3x$, and its Hypotenuse xx , it is required to find the Value of x , and the Sides of the Triangle in whole Numbers?

IX. QUESTION 154. By Mr. JOHN HAMMOND.

A valuable Piece of Land I've got,
 Of Form Triangular is this Spot;
 Between the least, the next, and biggest Side,
 An equal Difference I have desir'd:

The three Sides, and Content of which, you may find,
By the Conditions * I have here subjoin'd.

* The Product of the first and second Side of my Field. is to the
Product of the second and third Side thereof, as 1 to 3 ; likewise the
Product of the first and third Side thereof, as 1 to 3 ; likewise the
Product of all the three Sides inclosing it = 2176782336

X. QUESTION 155. By Miss REMNANT of Rochester.

A Petticoat of Silk, 3 Yards, 2 Foot and 1 Inch long, and Half
Yard and 10 Inches Wide, is sent me to be quilted in equal
squares, of 4 Tenths of an Inch to each Square-Side, and 58
Stitches to be taken in 9 Inches Length ; it is required to find the
Number of Stitches the Petticoat will take, and what the Work
will come to at 5s for a Thousand Stitches ?

XI. QUESTION 156. By Mr. JOHN HAMMOND, of Folkestone,
in Kent.

THREE scolding Women near me dwell,
Who all the Tribe of Billingsgate excell,
Their Neighbours think 'em Fiends of H—
To clear their Notes, when they begin,
They fill the Place with clam'rous Din—
When e'er they open—none can harken—
They set the very Dogs a Barking—
They make poor Men, their Husbands rue,
Who must submit to all they do ;

Say as they like—be Cuck—ds too.

There is no living near a Scold,

Remember Socrates of Old—

But, if their Ages you wou'd know,

Seek them from what you'll find below :

To each Termagant's Age when squar'd, if you

Add the squar'd Difference of the other two,

These Numbers * will expose themselves to View.

* 1394, 1664, for Ages of Scurrilla, Clamora, and Clangosa.

XII. QUESTION 157. Ex GEORGIO HICKS, Ludimagistro de Reced-
ness, in Comitatu Eboraci.

Pila cujus Diametrus est quatuor Pollicis longus jacta in Conicum
Aquam, Semiplenum Aquæ, cujus Diametrus est quinque Pollices, et Al-
tudo Sex ; Quantum Pila immergetur in Aquâ ?

XIII. QUESTION 158. By the AUTHOR.

A GENTLEMAN has agreed to receive a Debt of 500 l. at Yearly
Payments, and the Payment at each Year's End to be treble the
Sum of the Payment at the former Year's End :—The first Payment
is one Guinea paid down. In what Time will the Debt be paid
off, and what will be the Value of the last Payment ? Likewise,
if this Debt of 500 l. worth in ready Money, at 5 per Cent.
Compound Interest, Discount, allowed to a Purchaser ?

XIV. QUESTION 159. By Mr. WILLIAM BEVIL.

THREE Fires being placed 30, 40 and 50 Yards from one an-
other to determine the Distance of a Place from each of those Fires
(between them) of the least Heat ?

XV. QUESTION 160. By Mr. G. RUBES.

THE Ship *Neptune*, sailing uniformly, had a Six Pounder let from her Mast-Head, which descended to the Deck in three seconds of Time, during which Time, the Ship went 25 Grecian Paces through the Water: Quere the Distance descended by the Shot, and the Path it described.

N. B. The former Part of this Question was proposed in Ladies Diaries 1729, and answered in 1730, by an exceeding tedious Method; the Result of which differed from Truth by 14.22 Inches — But the latter has not before been proposed.

* * Whoever solves the following Question before the 1st of November next, has a Chance by Lot for 12 Palladiums, (equal in Value to 12 Ladies Diaries) which will be delivered in London according to Direction given.

PRIZE QUESTION. By the AUTHOR.

TO determine, by a METHOD the most general, easy, and exact, the Times and principal Phenomena of all the ECLIPSES of SUN and MOON, that will happen in 1760, for the Meridian of Greenwich Observatory; and to give their Times and Phenomena at Gibraltar, Antigua, Jamaica, New England, Virginia, and principal Settlements in the East Indies? Likewise the Times of Occultations of the Planets and fixed Stars (if any) by the Moon, Greenwich, or other noted Places, where visible, for 1760?

NEW PARADOXES.

I. NUMERICAL PARADOX. By Mr. BEVIL.

WITH Nine like Numbers duly placed,
Write down their greatest Sum and least.

II. NUMERICAL PARADOX. By Mr. JOHN HAMMOND.

With Figures Six, of all one Sort,
Write down Ten Thousand, plain and short.

ANSWERS to the ÆNIGMAS in the PALLADIUM for 1758.

I. ÆNIGMA, MADNESS. II. ÆNIGMA, TAR. III. ÆNIGMA, BARLEY.

All answered by Mr. Christopher Mason.

SIR JOHN (*) your Aid, a Glass to each brave TAR,
That British Arms may quell the Gallic War;
No patched up Peace; but pay 'em off th' old Score,
'Tis down right MADNESS e'er to trust them more.

All the Ænigmas answered by Mr. John Hicks, (a very ripe and hopeful Youth) of Mr. George's School, in Devon.

Arm'd with SIR JOHN, * each jealous MADNESS scorn—
Like each bold TAR,—nor think about Cape-Horn.

(*) Barley-corn.

Mr. William Swift of Stow, answered the same in Verse, and proposed two new Ænigmas, and sent us a Nofegay for the young Ladies of Stow, which we have not Room this Year, to exhibit. Miss Lucia, sent her Answers to the Ænigmas. And Mr. William Swift of Irthlingborough his Answers. Also Miss Green, Miss Fre...

Miss Lingwood, Miss Allen, Miss Mountain, Melissa, Miss Honey-
 uckle, Statira, Parochialis, Civicus, Mr. Blake, and a great many
 others to whom we are obliged for their Favours, but have not Room,
 this Year, to insert their Productions; and hope they will excuse us,
 till we find Opportunity to oblige them.

We shall, to oblige the fair Sex and others, deal more largely (if we
 can get Credit) in *Wit* and *Ænigmas*.

ANSWERS to the ÆNIGMAS in the LADIES DIARY,
 for 1758.

Mr. John Hicks, of Mr. George's School, in *Devizes*, writes to
 Mrs. Lewis, his Grandmother, at *Steeple-Ayton*, as follows.

Honoured Madam,

IN Obedience to your Commands, you have the Minutes
 of my last Week's DIARY. Sunday I read the SCRIPTURES, 1. 3.
 and saw a Member of the HOUSE OF C—s with fine BUCKLES 5. 2.
 on his Shoes, of the newest FASHION. His Lady was 4.
 dressed with a RUFF round her Neck, and a black 6.
 HANDKERCHIEF and a flounced Hat. A Gentleman gave 7.
 her a Kiss; then she raised her BREASTS, (which I saw Prize. 9.
 well and leave through a thin Veil) and gave him a REBUS; 1 Reb.
 answering another at the same Time, by telling him, that
 King RICHARD the III^d. lost his Crown at BOSWORTH, 2 Reb.
 and came to NOTHING. 8.

I shall soon be in the *Greek Testament*, and am

Honoured Madam,

your dutiful Grandson and humble Servant,

JOHN HICKS.

Mr. William Swift of *Stow*, answered the Rebus's. Mr. James
 Egge, answered the 1st and 4th Ænigma. Zeno of *London*, sent us
 the following excellent Quotation from *Waller* on *Justice*.

OF all the Virtues Justice is the best
 Valor, without it, is a common Pest;
 Justice from Reason, and from Heav'n we have,
 'Tis our Complexion makes us chaste or brave;
 All other Virtues dwell but in the Blood—
 That in the Soul — and gives the Name of Good.

ANSWERS to all the QUERIES in the Palladium, for 1758.

Q^UERE 76. answered by Mr. Christopher Mason, of *East-
 burn*, *Suffex*.

THE Arches of *London-Bridge* being stopped, the first high Tide
 would overflow the *Tower of London*, and Places adjacent. Some
 correspondents have attempted to prove, that the flowing Tide meet-
 ing with Resistance, at the stopped up Bridge, is sufficient to repel it,
 and that it recedes, and rises no higher than at other Times: That
 the principal Effect and Force at this Time would be by the Water at
 the Bridge, confined from passing, making a Breach, in Length of
 time, by its Pressure above Bridge, or overflowing the above Bridge
 gates. — But, as we have observed, very high Tides overflow the
 banks of all Rivers, when they meet with no Resistance in running

up, their overflowing their Banks must certainly be augmented when interrupted, or impeded, in their *progressive Motion*.

II. QUERE 77, answered by Mr. John Hicks, of the *Devizes*.
THESE green Circles are caused by the Ground being burnt with *Lightning*, thence impregnated with Sulphur. Mr. *Christopher Mason* is of the same Opinion, who says he has observed them for several Years together, before they produced any Grass. That, when Grass began to grow, it was mostly up in the *inner Edge* of the Circle, and about two or three Years before it became all covered with Grass, and then continued for 20 or 30 Years. Some affirm, these Circles are occasioned by Flocks of Sheep crowding together circular-wise; but Mr. *Mason* has observed these Circles where Flocks have been never known to come. Other Causes are assigned; such as *Reptiles*, taking Possession of this circular Earth—Subterraneous Heat evaporating, &c. proved not true, by Mr. *Mason's* Experiments.

III. QUERE 78, answered by Mr. *Christopher Mason*.

MATTER, or the material Substance of an Egg, being brought with the *Principles of Life*, is animated by the Quality of *Matter*, and not by a *Berkleyian Principle*, of *nothing but Spirit*; there being no *Matter*, no *Heat*, &c. according to that *Divine Philosopher*. *Emilia* solved it in the same Manner.

IV. QUERE 79, answered by a SAILOR.

THE Remedy for a drunken profligate Wife is a strict Confinement, a *seber Diet*, and to keep her from *what she likes*—But the Husband to return the Compliment for Favours she conferred on her Friends, against his Consent, may invite a Number of his own Acquaintance to his House, and make them welcome to an Entertainment, and the same Favours, without asking her Consent: Insisting, at least, on his equal Right to dispose of his own Property. He may apologize for the Obligation he is under to her, for leave taken, which he therefore, will repay in Kind. After which is duly performed, (*taking his last farewell*) he may set out on his Travels.

V. QUERE 80, answered by SOCIUS.

VICE and Folly contribute to the Benefit of others, so far as they make a Consumption in Trade, whereby the *Innocent Live and thrive*, and are *Gainers by the Guilty*. And as far as this profit, in Trade, circulates to the good of Others, so far *private Vices may be considered as public Benefits*, or rather *private Benefits in the Public*.

But *Vice and Folly*, are found to be more hurtful than Beneficial to the whole Public or Bulk of Mankind, and ought for that Reason (notwithstanding their Advantage to Particulars) to be discouraged and suppressed. For, it has been observed, when Vice and Folly, in any Government, have been connived at, for the Advantage of Particulars, that the very same Government has found its Fate, in the Corruption of the Peoples Morals: As, by the Excellency or Defect of which Morals, all States flourish and come to a Period. The State of a Body politic has been found similar to the Sound and sickly State of the human Body and Mind.

Emendation. P. 29. *first Line*, read,

Yet, ere he takes the Bolt in Hand.

P. 34. 2. Col. l. 23. fr. Bot. For 6 read G Dom. Letter.

VI. QUERE 81, answered by ACADEMICUS.

OUR Atmosphere or Body of Air being removed, if we could survive, all our Pleasures derived from the Use of that *Medium*, would vanish. We should no longer enjoy the Delights of *Vision*, but directly towards the Sun. All otherways being dark, and we could see no *Twilight*, nor of *Colours*, from the Reflection and Refraction of Light. We should be deprived of the *Harmony of Sounds*, the *Perfume of Scents*, the *Delicacy of Flavours*, and the grateful Sensations of Feeling, when the communicating *Medium* was taken away, designed for Man's Use and Happiness. Life itself would then prove joyless or a Pain. Therefore, to suppose an Absence of this Element, is to suppose a *Change of our Natures, and of all animated and organized Things about us, which were not made to subsist, in the absence of such Medium.*—Guns would then be useless.

VII. QUERE 82, answered by David Jones.

A drowned Body lies under Water till its Bulk (by swelling) becomes lighter than an equal Bulk of Water; when the Body rises and floats. The living human Body is heavier than an equal Bulk of Water but by a few Pounds, and therefore a few Pounds of Cork being tied to it to encrease its Levity, would prevent its sinking.

VIII. QUERE 83, answered by NOBODY.

IX. QUERE 84, answered by Mr. George Brown, of Oxford.

THE late miscellaneous Tracts, by Mr. Simpson, deny Sir Isaac Newton's Reasoning in the Deduction of the Quantity of the Precession of the Equinox by the solar Force; yet deducts the Quantity of Precession by the solar Force, according to Simpsonian Principles, from the whole Quantity of Precession by solar and lunar Force, according to Sir Isaac Newton's Principles, and so determines the Quantity of Precession from the lunar Force, in the Simpsonian Method; Wherein his famous Book is supposed to excell the *Principia* of Sir Isaac Newton, besides what it may excell the same in the *Moon's Theory*, when the Author brings it to Perfection. As to the *Tinder-box* and *Dark-chamber* Allegory, we may expect greater Light therefrom, when the Author shall be pleased to open our Eyes and favour us with his Moon-LIGHT.

X. QUERE 85, answered by the ARCHBISHOP OF TOLEDO.

THE celebrated Lady Mrs. Phillips, in *Half-Moon-Street*, near the Strand, fairly and openly advertises her reputable Occupation and Commodity, for public Utility. Who is certainly one of the greatest Assistants, in her Way, both as an *Inventor* and *Improver*, that any Nation has produced; and might justly be ranked with that eminent Person, who modelled and improved the Furniture of Henry the Eighth's Chamber, placed at the Entrance of the Horse Armoury, in the Tower, London; where Ladies and Gentlemen from all Parts, give their daily Attendance and pay for their Curiosity and Improvement.—Whereas, the celebrated *Author of Cannundrums, and mathematical Problems*, disingenuously disowns his Performances in the *Ladies Diary*, from an Apprehension of being exposed by the Critics, and Men of Judgment; who are Advocates for the ingenious Mrs. Phillips; whose Art or Occupation, therefore, is deemed, by far, the more reputable! For, while the

the public Authority suppresses indecent Prints and Pamphlets, the modest Commodities (*Preventatives against Corruption, and male Prostitution*) are openly tolerated and allowed!

Mr. John Hicks, of Mr. George's School, in Devon, tells us that a *Haberdasher* of mathematical Problems is more ingenious and reputable than a *Cunnundrum-Maker*.

XI. QUERE 86, answered by Sir ISAAC NEWTON.
The Answer is by the III^d of the IV following RULES.

THE RULES of REASONING in PHILOSOPHY.

See *Principia*, B. III. p. 202, 203. *English Edition*, Motu, 1729.

RULE I. We are to admit no more Causes of natural Things than such as are both true and sufficient to explain their Appearances.

To this Purpose the Philosophers say, that Nature does Nothing in vain, and more is in vain when less will serve; for Nature is pleased with Simplicity and affects not the Pomp of superfluous Causes.

RULE II. Therefore to the same natural Effects we must as far as possible assign the same Causes.

As to Respiration in Man, and in a Beast, the Descent of Stones in Europe and in America; the Light of our culinary Fire and of the Sun, the Reflection of Light on the Earth and on the Planets.

THE ANSWER to the Quere, of the Qualities of Bodies.

RULE III. The Qualities of Bodies, which admit neither Intensity or Remission of Degree, and which are found to belong to all Bodies within the Reach of our Experiments, are to be esteemed the Universal Qualities of all Bodies whatsoever.

For, since the Qualities of Bodies are only known to us by Experiments, we are to hold, for universal, all such as universally agree with Experiments, and such as are not liable to Diminution can never be quite taken away. We are certainly not to relinquish the Evidence of Experiments, for the Sake of Dreams and vain Fictions of our own devising; nor are we to recede from the Analogy of Nature, which uses to be simple and always consonant to itself. We no otherwise know the Extension of Bodies than by our Senses, nor do these reach in all Bodies; but because we perceive Extension in all that are sensible, therefore we ascribe it, universally, to all others also. That Abundance of Bodies are hard, we find by Experience. And because the Hardness of the whole arises from the Hardness of the Parts, we therefore justly infer the Hardness of the undivided Particles not only of the Bodies we feel, but of all others.

That all Bodies are impenetrable, we gather not from Reason but from Sensation. The Bodies that we handle we find impenetrable, and then conclude Impenetrability to be an universal Property of all Bodies whatsoever, that all Bodies are moveable, and endowed with certain Power (which we call the *vires inertiae*) of persevering in their Motion, or their Rest, we only infer from the like Properties observed in the Bodies which we have seen.

The Extension, Hardness, Impenetrability, Mobility, and *Vires Inertiae* of the whole, result from the Extension, Hardness, Impenetrability, Mobility, and *Vires Inertiae* of the Parts: and thence we conclude the least Particles of all Bodies to be also all extended, and hard, and impenetrable.

impenetrable, and moveable, and endowed with their proper *Vires*. And this is the *Foundation of all Philosophy*. Moreover, that the divided but the contiguous Particles of Bodies may be separated from one Another, is Matter of Observation; and in the Particles that remain undivided, our Minds are yet able to distinguish yet Parts, as is *mathematically demonstrated*. But whether the Parts distinguished, and not yet divided, may, by the Powers of Nature, be actually divided and separated from one another, we cannot certainly determine. Yet had we the Proof of but *one Experiment*, that a divided Particle, in breaking a hard and solid Body, suffered a Division, we might, by Virtue of this *Rule*, conclude, that the undivided, as well as the divided Particles, may be divided and actually separated to Infinity.

Lastly, if it *universally* appears, by Experiments and astronomical Observations, that all Bodies about the Earth gravitate towards the Earth; and that in Proportion to the Quantity of Matter, which they naturally contain; that the *Moon* likewise, according to the Quantity of its Matter, gravitates towards the *Earth*; that on the other hand, our *Sea* gravitates towards our *Moon*; and all the *Planets* mutually one towards another; and the *Comets* in like Manner, towards the *Sun*; we must, in Consequence of this *Rule*, universally know, that all Bodies whatsoever, are endowed with a *principal of universal Gravitation*. For the Argument from the *Appearances* concludes with more Force, for the universal Gravitation of all Bodies is for their Impenetrability; of which among those in the celestial Regions, we have no Experiments, nor any Manner of Observations. Not that I affirm Gravity to be *essential* to Bodies. By their *Inertia*, I mean nothing but their *Vis Inertiae*. This is immutable. Their Gravity is diminished as they recede from the Earth.

RULE IV. In *experimental Philosophy*, we are to look upon Propositions, collected by general Induction, from Phænomena, as *accuracy, or very nearly true, notwithstanding any contrary Hypothesis, may be imagined, till such Time as other Phænomena occur, by which they may either be made more accurate, or liable to Exceptions*.

This Rule we must follow, that the Argument of *Induction* may not be overruled by *Hypothesis*.

XIII. QUERE 87, answered by the AUTHOR.

HEAT and Light are the Properties of Fire, whose Operations and Effects refer to our Senses, and not to chimerical Imagination. There may be Heat, or Fire concealed, without expanded Light; but where there is Light, proceeding from Fire, Heat is latent or may be extracted; as the scattered Rays of Light or luminous Particles, are collected in a Focus to Heat, by a burning Glass.

The *Glow-Worm* Light, or that reflected from *Skining* or bright surfaces, in the Night, is the scattered Light in the Air, reflected from these Bodies.

HEAT and Light by Experiment, is found to decrease, as the Distance from the Sun or Fire encreases, which is universally true in the Light and Heat on all the Planets Surfaces. If a person puts his Hand near a Fire where the Heat is very strong, and

and immediately begins to withdraw it slowly, to where the Heat really less, he will find the Heat greater where he has withdrawn his Hand to, 4 or 5 Inches back, than when it was so much nearer the Fire; because of the Duration of Heat in the withdrawing. Experience shews, also, that the Day is hotter about 3 in the Afternoon, than at Noon; because of the Increase made to the Meridian Heat, by the Duration of Heat from Noon. And tho', according to the Earth's *elliptic* Orbit, with the Sun in the lower Focus (about 1,337,000 Miles from the Middle of the longer Axis) the Earth is nearer the Sun in the Winter than Summer, by 803,400 Miles (as 1 to 1,034,27, &c. the Eccentricity of Earth's Orbit being 1685 to 100,000 mean Dist.) viz. nearer by about 2,750,000 Miles Difference in the Winter, yet we find our Heat greatest, or Summer happens, when the Sun is farthest from us; because the Sun's Rays, in the Summer, fall in greatest Quantity, *rectly* upon our Earth, and excite greatest Heat by their Duration, heating the Earth's Surface; whereas, in the *Winter-Season*, when the Sun is *nearest* us, his Rays falling obliquely on the Earth's Surface, are scattered over greater Surface, and heat not as in Summer when *more Rays fall upon less Surface*.

In the long Winter-Nights, in very Northern or Southern Latitudes, a greater Degree of Cold is contracted in that Earth's Surface by Duration, than the Heat, on that Surface, by Duration, in the Winter-Days can vanquish; causing an *additional* increase of Cold by Duration, in the Winter, as of *additional* increase of Heat by Duration, in the Summer. — Hence, large Continents retaining Heat or Cold, for a long Time, are always hotter and colder, in Summer and Winter, than are small Islands, lying nearly in the same Climate. And hence Comets of different Magnitudes, will retain different Degrees of Heat and Cold, in the *Perihelions* and *Aphelions* of their Orbits.

Between the Tropics, and near the *Equinoctial*, where the Sun's Rays fall direct all the Year, there is never no Winter; but Heat continues, by Duration of the heated Air and Earth's Surface.

Our *Antipodes*, whose Summer is in our Winter, are nearest the Sun in their Summer, and furthest from him in their Winter; where Heat and Cold are contrary, but similar to ours; except the difference of Intensity arising from their bigger Seas, and less Surface of Earth to retain different Degrees of Heat and Cold.

As to the Nature of Light. Sir Isaac Newton (in B. I. p. 30 *Principia*, Motte, 1729) says, it is now certain from the Appearance of Jupiter's Satellites, confirmed by Observations of different Astronomers, that Light is propagated in Succession, and requires about 7 or 8 Minutes to travel from the Sun to the Earth. And the Velocity of Light is different in different Mediums. And Light is propagated and not caused by the Agitation of any *etherial Medium*. Moreover, the Rays of Light that are in our Air (as lately was observed by Grimaldus, by Admission of Light into a dark Room through a small Hole, which I have also tried) in their Passage at the Angles of Bodies, whether transparent or opaque (such as

circular and rectangular Edges of Gold, Silver and Brass Coins; or of broken Pieces of Stone, or Glass) are bent or inflected round those, as if they were attracted to them; and those Rays, which in their Passage come nearest to the Bodies, are the most inflected, as if they were most attracted; which Thing, I, myself, have also carefully observed. And those which pass at greater Distances are less inflected; and those at still greater Distances, are a little inflected the contrary Way, and form three Fringes of Colours.

Sir Isaac Newton, next shews (p. 316) the Inflection of the Rays greater or less, towards the Edge of a Knife, or any Kind of Wedge. He then proceeds—Since this Inflection of the Rays is performed in the Air, without the Knife, it follows, that the Rays which fall upon the Knife, are first inflected in the Air, before they touch the Knife. And the Case (*he says*) is the same of the Rays falling upon Glasses.

The Refraction, is therefore, made not in the Point of Incidence, but gradually, by a continual Inflection of the Rays, which is done partly in the Air, before they touch the Glass, partly (if I mistake not) within the Glass, after they have entered it, which he illustrates by Example (Plate 25. Fig. 7. Principia.) Therefore, because of the Analogy there is between the Propagation of the Rays of Light, and the Motion of Bodies, he thought it not amiss, to add the following Proposition for optical Uses; not at all considering the Nature of the Rays of Light, or enquiring whether they are Bodies or not; but only determining the Trajectories of Bodies, which are extremely like the Trajectories of Rays.

PROPOSITION 97. PRINCIPIA. *Supposing the Sine of Incidence upon any Superficies to be in a given Ratio to the Sine of Emergence; and that the Inflection of the Paths of those Bodies near that Superficies is performed in a very short Space, which may be considered as a Point, it is required to determine such a Superficies as may cause all the Corpuscles, issuing from any one given Place, to converge to another given Place.*

Sir Isaac goes on to demonstrate this, and another excellent PROPOSITION 98, he gives for optical Uses; then he concludes with this Scholium—In the same Manner one may go on to three or more Superficies. But of all Figures, the Spherical is the most proper for Optical Uses—If the Object Glasses of Telescopes were made of two Glasses of a Spherical Figure, containing Water between them, it is not unlikely that the Errors of the Refractions made in the extreme Parts of the Superficies of the Glasses may be accurately enough corrected by the Refractions of the Water. Such object Glasses are to be preferred before elliptic and hyperbolic Glasses; not only because they may be formed with more Ease and Accuracy; but because the Pencils of Rays, situate without the Axis of the Glass would be more accurately refracted by them. But the different Refrangibility of different Rays is the real Obstacle that hinders Optics from being made perfect by Spherical or any other Figures. Unless the Errors thence arising can be corrected, all the Labours spent in correcting the others, will be quite thrown away.

Light consists of amazingly small Particles of subtil Matter, issuing, in all Directions, in right Lines, from any luminous Body; such as from a Fire, the Sun, a lighted Candle, &c. And these exceeding small Particles of Matter flowing, in all Directions, through the same or different Mediums, impede not one another's Motion. The Atmosphere, or aerial Particles, reflect the Sun's Light before he rises

and after he sets, causing what is called *Twilight*. By Means of the Atmosphere, or *Medium of Air*, refracting the Sun's Rays falling on its Surface from a right Line, he is brought in View sometimes 10, but generally 6 Minutes before he rises; and kept in View, as long, after he sets.

Light is propagated or found to fly above 164 Thousand Miles, every Second of Time; being a *Million* Times more swift than the Motion of a Cannon Ball; and therefore if the Particles thereof were not smaller than can be imagined, they would wound or hurt our Sight by their prodigious Velocity; so as to make us afraid to open ~~to~~ our Eyes.

The Rays of Light, coming from all Parts of an Object through the *Pupil* of the Eye, converges so as to paint the Form of the external Object on the *Retina*, at the Bottom of the Eye, which is conveyed to the Brain by the optic Nerve, and exciting an Idea of the Picture, on the *Sensorium*, Vision is thereby performed.

A Ray of Light is a continued Stream of luminous Particles, flowing from a visible Object in *strait Lines* unless refracted, when it is turned by the refracting *Medium*, upon whose Surface it falls, from a *Straight*, to move in a *crooked Line*. And thus, Light falling upon the Body of our Atmosphere, from the *celestial Bodies*, those Bodies, by Refraction of Light, are made to appear in different Places to where they are; which *Refraction* is allowed for according to the different Altitudes of the celestial Bodies.

Rays uninterrupted by a Change of *Medium*, and without Refraction, evidently move in *strait Lines*, because in our Air, Bodies are not visible, being looked at through the Bore of a *bended Tube*; or because they are hindered being seen by other Bodies interposing between them and our Sight. And that the Rays of Light meeting all Ways, do not interfere, or turn one another out of their Direction, appears from hence.

If you make a *small Hole* in a Plate of Metal, and place it upright on a Table, facing a Row of lighted Candles, holding a Sheet of Paper, or Pastebord, at a little Distance, behind the *Hole*, the Rays of all the Candles, flowing through the *Hole*, will form as many Spots of Light on the Paper, as there are Candles on the other Side of the Plate; and each Spot as *distinct*, and large, as if there were only one luminous Spot from one Candle: A Proof, that the Rays of that amazing Substance, Light, are no Hindrance to each other's Passage, crossing one another in the same Hole.

The Planets appear dimmer when viewed through a Telescope than seen by the naked Eye; because the Glasses cannot magnify their Quantity of Light on their Surfaces, as they do their Disks or Surfaces themselves.

The more Dense any *Medium* is, the more refracted will the Light be passing through it. And the more or less obliquely Light falls upon the Surface of a *Medium*, the more or less it is refracted; but falling perpendicular thereon is not refracted at all.

☞ A late wise Pamphlet (by a wise Author) denies the Existence of the Rays of Light; making that amazing Substance to be a bright white Nonentity, a mere Quality, or Reflection, of no Substance; contrary to the Experiments, Observations, and Demonstrations, of all the greatest Philosophers; and particularly of the Great Sir Isaac Newton. — On which Pamphlet a Correspondent remarks,

O Chatham, Chatham, what Virtues you inherit,
and Poor R---s are wretched, while rich ones rise by Merit!

PRIZE-QUERE answered by MARCELLA, at the Hand and Hand Fire-Office, Snow-hill, London; who won the First Prize.

AS dubious Damon gain'd Belinda's Ear,

GAY Collin favour'd a desponding Fear.

Answered by Miss Freeman, who won the Second Prize.

ARMS daily defending great Britain's Empire;

GREAT CONQUERING FRED'RICK allows double Fire!

Marcella's and Mr. Smith's Answers sent, did not come in Competition with Marcella's, Fidelia's, Eliza's, Miss Freeman's and Mr. West's Answers; whose Names being wrote upon 5 separate Pieces of Paper folded up, and then drawn, Præsum, out of Eliza's Apron, the 1st Lot of 4 Palladiums, fell to the ingenious Marcella; and a Second Drawing being then made, the Second Lot fell to the deserving Miss Freeman.

ANSWERS to the QUESTIONS in the Palladium, for 1758.

QUESTION 131, answered by Mr. Edward Ellis, of Reedness-School, near Howden, Yorkshire.

PUT $a=100001$, x =Son's Share; then $a-x$ =Daughter's Share, and, by Equation, ax^2-x^3 =a Maximum, which, in Fluxion, is $2ax\dot{x}-3x^2\dot{x}=0$; reduced $x=\frac{2}{3}$ $a=6666\frac{2}{3}1$. = Son's Share; whence $3333\frac{1}{3}1$. Daughter's Share. W. R.

Mr. R. Bassett, of Harpswell-School, Lincolnshire, solves it by the very same Method, who determines the Son's Share = 66661. 13 s. 4 d; and the Daughter's Share = 33331. 6 s. 8 d.; the same as above.

Mr. Henry Green, of Nottingham; Mr. William Allen, of Southwark; Mr. Griffiths, at Pentrepant, near Oswestry, Shropshire; Mr. John Thompson, of Holy-Briggs, Leicestershire; Mr. James Carter, of Clanfield, Oxfordshire; Mr. William Ashton, of Louth-School, Lincolnshire; Chesterfieldensis, of Chesterfield; many others, too tedious to insert, solved the same in a judicious and elegant Manner. Thomas Huntley, of Burford, elegantly solved it in Latin; as did Mr. George Ellis, of Reedness-School, in Yorkshire.

QUESTION 132, answered by Mr. P. Freeston, of Harpswell-School, Yorkshire.

LET x =Number, then x^2-x^3 is a Maximum, which, in Fluxions, is $2x\dot{x}-3x^2\dot{x}=0$; whence $x=\frac{2}{3}$, the Number required.

Mr. Henry Green, Mr. Edward Ellis, Mr. E. Griffiths, Mr. William Allen, Mr. John Thompson, Mr. James Carter, Mr. William Ashton, Chesterfieldensis, and a many others, solved it by the very same Method: As did Mr. Thomas Huntley, Mr. George Hicks, both in Latin.

III QUESTION 133, answered by Mr. A. Brooke, the Proposer.

PUT N =given Number, to be divided into 4 such Parts; n =Number to be divided, &c. and a =such Sum, Difference, Product, and Quotient. Then will

$4+n$, $\frac{a}{n}$, and na = the 4 Parts; conseq. $2a+\frac{a}{n}+na=N$, per Quest.

Hence, $a=\frac{Nn}{n+1}^2$; whence, by Substitution in, the 4 Parts will be, $\frac{Nn}{n+1}^2$

$\frac{Nn}{n+1}^2+n$; $\frac{N}{n+1}^2$; $\frac{Nn \times n}{n+1}^2$ W. W. R.

Mr. R. Bassett, of Harpswell-School, Lincolnshire, solved it exactly in the same Method. Mr. Ashton, Mr. Carter, Mr. Hammond, Mr. Allen, and Chesterfieldensis, solved another Method. And Mr. John Thompson has sent the same Theorems, from his Second Edition of *Ronayn's Algebra*. The Proposer gave us Notice of this

this Question's Likeness to 28th in Ward's Algebra; but proposed it (he said) in Manner of Solution. Mr. Thomas Huntley's LATIN SOLUTION, a Specimen of the general Method, by the Contributors, is as follows,

Fiat $a = \text{Numero dato}$, $v = \text{Parti primæ}$, $x = \text{secundæ}$ $y = \text{tertiæ}$, $z = \text{quartæ}$ *esloque n quivis Numerus ad Libitum positus: dein*

	1	$v+x+y+z=a$	} <i>per Data</i>	$9 \div \overline{n+1}^2$	10	$y = \frac{a}{n+1}^2$		
	2	$v+n=x-n$						$\frac{a \times n^2}{n+1}^2$
	3	$=y \times r = z \div n$						$\frac{a \times n}{n+1}^2$
2 - n	3	$v=x-2n$						
1 Sub 3.	4	$x-2n+x+y+z=a$	} <i>by 8 & Subn 10.</i>		11	$z = \frac{a \times n^2}{n+1}^2$		
by 2	5	$ny+n=x$						
4 Sub. 5.	6	$2ny+2n-2n+y+z=a$	} <i>5 Sube 10.</i>		12	$x = \frac{a \times n}{n+1}^2$		
i. e.	7	$2ny+y+z=a$						
by 2 and 7	8	$z=y \times n^2 = a - 2n + 1 \times y$	} <i>3 Sube 12.</i>		13	$v = \frac{a \times n}{n+1}^2$		
i. e.	9	$n^2 y + 2ny + y = a$						

IV QUESTION 134, answered by Mr. P. Freeston, of Harpswell-School.

Given	1	$y\sqrt{x+\frac{y}{x}}=16,25=b$	} <i>by Quest.</i>	4 Sube	7	$\frac{z^5}{u^3}+z^2=\frac{c^2}{a^2}$	
	2	$x\sqrt{y+\frac{x}{y}}=36=c$					8
					i. e.	6 and 8	$a-u+cu=bu^2$
					solved	10	$u=2$, whence
1 X x	3	$xy\sqrt{x+y}=bx$	} <i>now put $z^2=x$</i>				Therefore $x=$
2 X y	4	$xy\sqrt{y+x}=cy$		} <i>and $\frac{z^2}{u^2}=y$</i>			
3 Sube	5	$\frac{z^5}{u^2}+\frac{z^2}{u^2}=bx^2$					
i. e.	6	$z^3+1=bu^2$					

This Method by Steps is most plain.

The same answered by Mr. William Allen, of Southwark.

PUT $ny=x$, Then $\sqrt{ny^3}=b-\frac{1}{n}$, or $ny^3=b^2-\frac{2b}{n}+\frac{1}{n^2}$; and $\sqrt{\frac{1}{n^2}}$

$c-n$, or $n^2y^3=c^2-2cn+n^2$, whence $\frac{b^2}{n}-\frac{2b}{n^2}+\frac{1}{n^3}=y^3=\frac{c^2}{n^2}-\frac{2c}{n}+1$.

duces we have $n^3-2c+b^2 \times n^2, +c^2+2b \times n=1$, which solved, $n=4$; $y=4$, and $x=16$. W. W. R.—Mr. John Thompson, Mr. W. Aston, Mr. Carter, Chesterfieldensis, Mr. Edw. Ellis, of Reedness School, and Mr. Geo. solved this Question by different Substitutions.

RESOLUTIO V. QUESTIONIS et 135, à Dom. THOM. HUNTLEY.

1	$v+x+y+z=54$	} <i>per Data.</i>
2	$2v+4x+5y+6z=256$	
3	$6v+6x+20y+8z=656$	

De 2da Equatione triplicem subduc 1mam, et restabit

4	$x+2y+3z=94$
---	--------------

Ad tertia subtrahere Novies primam, et

5	$8v-3x+11y-z=170$
---	-------------------

Ad quartam ter Equa. 4ta ad 5tam, et

6	$17y+8z=432$
---	--------------

Cum Numeri v, x, y, z Valores integros et positives habere necesse sit, (sicut ex Equationibus visis abunde constat) major quam 26, nec quam 17 esse potest; si Numeri, qui intra hos limites existunt, tem

addatur Obies, 5ta, et 6tam, et summae hujus Pars ter-

*Valor y evadet = 20; unde
Valor x facillimè deducitur,
= 12; z = 14, et v = 8.
Q. E. I.*

ia erit
 $-8x + 35y = 604$

$= \frac{452-17y}{8}$ per 6tam.

$= \frac{35y-604}{8}$ per 7mam.

Mr. James Carter answers it thus.

Now, by substituting all the possible
Values of v and y , I find when $v = 8$,
and $y = 20$; that $x = 12$, and $z = 14$,
being the only Answer in whole Num-
bers. Mr. W. Allen, by a just Reasoning,
solves it truly in the same Method.

$$\begin{cases} 1) v + x + y + z = 54 \\ 2) 3v + 4x + 5y + 6z = 256 \\ 3) 9v + 6x + 20y + 8z = 656 \\ 4) 6v + 2x + 15y + 2z = 400 \\ 5) 2v + 2x + 2y + 2z = 108 \\ 6) 4v + 0 + 13y + 0 = 292 \end{cases}$$

Answered by Chesterfieldensis.

From the given Equations (as above) he determines,

By 1st and 4th he finds that z cannot be less than 9,
nor greater than 19 to have affirmative Numbers in the
Answer; neither will there be any more (*he says*) than
one Answer in whole Numbers, *viz.* when $z = 14$,
 $y = 20$, $x = 12$, and $v = 8$. But there may be many
Answers in Fractions; some of which he here exhibits;

$$\begin{cases} 1) v + 3z = 94 \\ 2) v + 10z = 112 \\ 3) v + 8z = 452 \\ 4) \frac{452-8z}{17} \end{cases}$$

those that will be found by assuming z an Integer, or whole Number, as in the
following Table of Solutions.

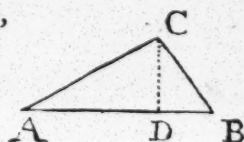
z	y	x	v	z	y	x	v
9	$22\frac{0}{17}$	$22\frac{5}{17}$	$\frac{6}{17}$	15	$19\frac{9}{17}$	$9\frac{10}{17}$	$9\frac{3}{17}$
10	$21\frac{15}{17}$	$20\frac{4}{17}$	$1\frac{15}{17}$	16	$19\frac{1}{17}$	$7\frac{15}{17}$	$11\frac{1}{17}$
11	$21\frac{7}{17}$	$18\frac{3}{17}$	$3\frac{7}{17}$	17	$18\frac{10}{17}$	$5\frac{4}{17}$	$12\frac{10}{17}$
12	$20\frac{0}{17}$	$16\frac{2}{17}$	$4\frac{10}{17}$	18	$18\frac{2}{17}$	$3\frac{13}{17}$	$14\frac{2}{17}$
13	$20\frac{8}{17}$	$14\frac{1}{17}$	$6\frac{8}{17}$	19	$17\frac{11}{17}$	$1\frac{12}{17}$	$15\frac{11}{17}$

E. J. Hammond of Folkestone, in Kent, likewise solved it.

VI. QUESTION 136, answered by Mr. James Carter.

$AT = 435$, and $BT = 4485$; then in the first Equation, we have $2x^2 + 3y^2 = a$,

$x = \sqrt{\frac{a-3y^2}{2}}$; also, by transposing both Equations,



dividing the 2d by the 1st, we have $\frac{2x^3}{2x^2} = x =$

from the above Values of x , we get $y^6 - \frac{3a}{5}y^4 - \frac{4b}{15}y^3 + \frac{a^2}{5}y^2 +$
 $= 0$. Solved $y = 7 = BC$; whence $x = 12 = AC$.

let $z = \text{Sine of greater } \angle \text{ at the Base } = B, (\text{Rad.} = 1) \text{ then, by Trigonom.}$

$z : y :: \frac{12}{x} = \text{Sine less } \angle \text{ at the Base } = A$. Then, per Quest. $\frac{1}{\sqrt{1-z^2}} : 3 ::$

$$\sqrt{\frac{1}{1 - \frac{y^2 x^2}{x^2}}} : 2; \text{ whence } \frac{2}{\sqrt{1 - z^2}} = \frac{3}{\sqrt{1 - \frac{y^2 x^2}{x^2}}}, \text{ and } z = \frac{y^2 x^2}{9x^2 - 4}$$

$\approx .809039 = \text{Sine } 54^\circ 0' 6'' = \angle B$; whence AB the Base is found 14,693912. W. W. R. — Mr. Huntley, by a curious Process, finds $y=7$, $x=$ by Equation of the 6th Power; then finds $z=CD=5,66328$; $AD=10,579$; $BD=4,11428$; and $AB=14,693888$, required.

Chesterfieldensis solved it correctly, by an Equation of the 6th Power, and a method concise as either of the Former.

VII. QUESTION 137, answered by Mr. James Carter.

LET T represent the Tree, and the Hyperbolic Curve AVB, the Path of the Shadow of the Top thereof describing between the Hours of Nine and One. Then, from the Lat. Time of the Day, and the Sun's Declination $= 8^\circ 51' N$. being given; the Length and Position of the Lines TA, TV, and TB, become known; and consequently the Semi-ordinates AD, BC, with their corresponding Abscissæ, VD, and VC, are from thence easily found. Now, let $b=46$ the Tree's Height, $m=$ Sine of the Sun's Meridian Altitude, $n=$ Sine of his Depression at Midnight; and $s=$ Sine of twice his Declination; also let $c=$ cof. Declination

Rad. being $=1$. Then we have $OV = \frac{bs}{2mn} = a$

$=18,03249$ the Semi-Transverse, and $\frac{cb}{\sqrt{mn}} = b=72,9892$ the Semi-Conjugate

Axis of the described Hyperbola—Draw the Tangent EF through the Vertex V, then, by Sim. Δ s, as $OD : OV :: AD : EV$; and $OC : OV :: VC : VF$.

Hence $EV = \frac{OV \times AD}{OD} = 1 = 44,69$; and $VF = \frac{OV \times BC}{OC} = 1 = 73,13$.

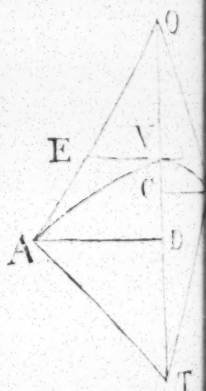
Now by Emerson's Fluxions, 2d Edit. p. 257, we have $\frac{1}{2} ab \times 2,302585$

$\frac{b+\tau}{b-\tau} + \text{Log.} \frac{b+\tau}{b-\tau} = 613,024 = \text{Area of the Sectors OAV and OVB};$

subtracted from the Area of the Trapezium OATB, leaves the Area ATB 1513,08116 square Feet. Hence the Purchase-Money is 181l. 7s. 4d. Acre. W. W. R.

Chesterfieldensis makes Sun's Altitude, when due E. and W. that Day (Apr.) $11^\circ 42'$; who substitutes for Compl. of 15° , or 1° O' Clock, Compl. of 45° , or 9 O' Clock, making the Shade of the Tree terminate Ground from 9 till 1; and so to describe the Segment of an Ellipsis (indeed Hyperbola.) Whence he makes Sun's Altitude at 1, $47^\circ 0' 14''$, and at 9, $34' 9''$. He next determines the Semi-Conjugate 40,99 Feet, and Semi-Major 222,131 Feet; then the Length of the Shade at 1, and 9 O' Clock, 4 and 66,758 Feet, respectively.

Then he determines the Area of the Elliptic Segment 5827,609 square Feet, making the Ground 47l. 1s. 9d. $\frac{1}{2}$ per Acre—which we leave to be examined.



EXPLICATIO QUESTIONIS Septimæ, à Dem. HUNTLEY.

Aprilis 12^{mo}, Anno 1757, Sol horâ nonâ matutina 8° 48' 26" ab Æqua-
torali Septentrionalem declinabat; et Hora primâ post Meridiem 8° 53' 13".
Sit ergo $a = \text{Cof. } b = \text{Sine } 80^\circ 48' 26''$, $m = \text{Cof. } n = \text{Sine } 50^\circ 6'$; $c = \text{Cof.}$
Horis; tum Sinus Altitudinis veræ = 5656873 = S. 34° 27'; et additâ
Altitudine Solis ejusque Semi-Diametro, ac Subductâ Parallaxi, emergit Altitudo
vera = 34° 36' 22". — Pari Modo, Altitudo Solis Vera 46° 56' 30" apparens
Dicitur ejusdem primâ P. M. investigatur = 47° 12' 17".

— Fiat; ut S. 55° 33' : S. 45° :: S. 81° 11' 34" : S. 57° 55' 41"
et ut S. 43° 3' 30" : S. 15° :: S. 81° 6' 47" : S. 21° 59' 48"

— sunt Arcus Horizontis, inter Circulos verticales, in quibus situs erat Sol Horâ
Mâne primâque P. M. intercepti; qui quidem in unam additi (propterea quod Sol
Meridianum) efficiunt Angulum Umbris inclusum = 79° 55' 29"

Pedes

Pedes

3° T. 47° 12' 17" : 46 : T. 45° : 42, 58942 } Longitudines
T. 34° 36' 22" : 46 : T. 45° : 66, 6656 } Umbrarum.

100° S. 79° 55' 29" :: 42, 58942 × 66, 6656 ÷ 2 : 1397, 731 Pedes quadratos,
Area empta occupat.

Shil.

quoque 1397, 731 : 126s : 66 × 66 × 10 = 43560 : 3926, 8 = 196 l. 6 s. 9 d.
ratio quod per Jugerum Armiger dedit. Q. E. I.

VIII. QUESTION 138, answered by Chesterfieldienfis.

B. In this Question certain Part was printed for certain Port.

T. = greater Departure, $c = \text{less Dep.}$

$a + c = 48$ } per } Whence $a = 48$
 $a - c = 12$ } Quest. } $c = 36$

[Leagues

The Ratio of the two Distances sailed being

as 3 to 4, in the same Ratio, as 12 to 48,

two Departures; therefore those Departures

will be the same as the Distances sailed

on the Equinoctial (without Lat.) Supposing

Ship to move from S. to W. and the other

S. to E. or one Ship to move from S. to

and the other from S. to m ; W. E. being considered the Equinoctial.

Other Correspondents answered this Question in the same Manner.

We find the Diff. of Departures (in the Question) does not suppose, by any Means,

same Latitude to both—One Departure may be E. and the other W. of the

Meridian sailed from, as MP and SW ; or one Departure may be more Westerly

than the other, of the Meridian sailed from, as SW and Mn ; which latter Case

is to be meant. Hence, this Question is proved to be unlimited. The De-

partures are $48 = SW$, and $36 = SE = MP = Sm = Mn$. Now setting off

SW , and drawing the prick'd Lines mn and EN , from the other Departure =

either to the W. or E. of the Meridian NM , whatever NW is taken (at

pleasure) Nw , or NP may be taken, or set off to the prick'd Lines from N ,

in the Ratio, 3 to 4, &c. (at Pleasure) mn and EP being drawn || to the first Me-

ridian (both Ways) at given Distances. Hence, if the Difference of two Latitudes

had been given, (which might be miscopied) to make it a proper Question, it

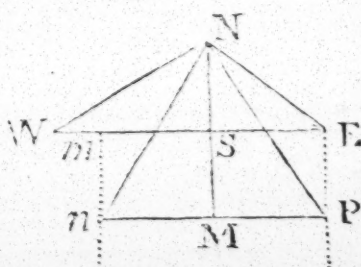
could be thus solved. Put $a = 48 = SW$; $b = 36 = SE = Sm$; $d = SM$, $3x =$

SW , and $4x = NM$. Then, $\sqrt{9xx - aa} = NS$, and $\sqrt{16x^2 - bb} = NM =$

$4x - a + d$; which Equation reduced and solved readily gives the Answer.

IX. QUESTION 139, answered by Mr. James Carter.

$T = 3000$ l. $n = 365$, the Number of Payments, and $r = \text{Ratio of the Se-}$
ries.



ries. Then seeing the last Day's Payment is 1*l*. we have $\frac{r^n - 1}{r - 1} = s$; wh

Equation solved by the Method of Trial and Error, and a Table of Common Log^s. gives $r = 1.011189$; whence, $r^n - 1 = 55.97457 = 55*l*. 19*s*. 5*d*. the first Day's Payment.$

Note, if $n = 366$, then $r = 1.0110786$, and $r^n - 1 = 55.77659 = 55*l*. 6*d*. $\frac{3}{4}$. Remark. We find this to be the true Answer.$

Chesterfieldiensis solves it by the same Method; who makes the 1st Payment 55.9758 *l*. = 55 *l*. 19 *s*. 6 *d*. by taken $n = 365$ instead of 366.

Mr. Will. Aiston, from the same Theorem, as given by Mr. Carter, and $n = 366$, finds $r = 1.011078$, and $r^n - 1 = 55.78615$ or 55*l*. 15*s*. 4*d*. $\frac{1}{2}$, the 1st Payment. Mr. Huntley solved the same in Latin.

REMARK by the Pal. Author. In finite decreasing geometrical Progressions same Rules will serve, as for the Propositions of increasing geometrical Progressions if the Series be inverted, so that the least or last Term of the decreasing Progression be taken for the first of the increasing one; and the greatest, or first Term, of the decreasing, for the last of the increasing.

In increasing Progressions $a = 1$ Pound, $s = 5000$ *l*. and $n = 366$ being given find r and l : where the last given is put for the 1st Term, and the 1st required for the last Term?

If $\left\{ \begin{array}{c} a \\ r \\ n \\ l \\ s \end{array} \right\}$ represent the $\left\{ \begin{array}{c} \text{First Term} \\ \text{Ratio} \\ \text{Number of Terms} \\ \text{Last Term} \\ \text{Sum of Terms.} \end{array} \right\}$

By Jones's Synopsis Palmariorum, p. 201, $\frac{ar^n - a}{r - 1} = s$; $l = \frac{r - 1 \times s}{r}$ $= ar^{n-1}$; whence the Answer is had in general; and, in particular, according to Mr. Carter, and Mr. Aiston, above.

X. QUESTION 140, answered by the Proposer, Mr. Rubes.

PUT $d = 3957.852897$ Miles; $l = 45.49575845$ Miles; $A = 8759046$ Sine given Lat. $e =$ Secant of the required Course. Then by a short Computat

find 3376 Miles $= d \times \frac{1}{e^2 - 1} \times d$ into $A - \text{Log. } \frac{1 + n - \frac{l}{e}}{1 - n + \frac{l}{e}}$; from wh

quation, and the Method of Trial and Error, $e = 2.5874365$, answering, in Table, to the Secant of $67^\circ 15' 51''$, which is a S. W. by W. $\frac{3}{4}$ Course, and $34' 36''$ westerly. W. W. R.

N. B. The Longitude was given, according to Mr. Emerson's Navigation, from the westernmost of the Canary Isles, easterly.

XI. QUESTION 141, answered by Chesterfieldiensis.

LET B represent the Port sailed from, $\angle CBD = 22^\circ 30'$ one Ship's Course S. S. W. whose nat. Sine $= .382683$; $\angle CBD$, the other Ship's Course, S. W. by W. whose nat. Sine $= .831469$; and $AD = .5$ of a Mile, the Diff. of Departures.

Now, $\angle DAB = 31^\circ 45' = \angle ABD$, whose nat. Sine $= .55557$; therefore, $BD = AD = .5$ is known.



Dif. Lat. $0^{\circ} 0' 28'' = .46194$ Mile.

Mr. Smith's Answer.

$$dx = SN. c : x :: \text{Rad.} : \frac{x}{c} = Nw.$$

$$\left[\frac{g+x}{a} \right]^2 + \frac{x^2}{c^2} - \frac{x}{c} \times \frac{g-x}{a} \times c = \overline{Ww}^2 = (\overline{WA}^2 + \overline{Aw}^2) g^2$$

XII. QUESTION 142, answered by Mr. G. Rubes, the Proposer.

Emerson's *Mechanics*, p. 59, CD =

and $AD = \frac{a^2 - bdt^3}{a}$, whence $BE = \frac{b}{a^2} \times \overline{a^2 - bdt^3}$ per Quest. must be

in Fluxions, $t = \frac{\overline{a^2}}{4bd} \Big|^{1/3} = 25$ Seconds, very nearly, the Time when

Ascent will happen; then will the Ball be 18,714 Feet fr. the Ground.
 $AC=a$, $CD=e$, $t=25$ Seconds of Time, T =required Time in Seconds,

Ball takes up in running along the Plane, when $T = t \sqrt{\frac{a}{g}} = 50$ Seconds,

Time of the Ball's Motion, till it quits the given Plane.

Hence it follows, the Time of the Ball's Motion along the Plane, its Ascent is a *Maximum*, is equal to half the Time of its Motion, till it quits the Plane.

XIII. QUESTION 143, answered by the Author.

$$\left. \begin{matrix} a \\ d \\ n \\ l \\ s \end{matrix} \right\} \text{ be the } \left\{ \begin{matrix} \text{First Term} \\ \text{Com. Difference} \\ \text{Number of Terms} \\ \text{Last Term} \\ \text{Sum of all Terms} \end{matrix} \right\} \left\{ \begin{matrix} d = 4d = \frac{1}{3}s. \\ n = 52 \\ s = 800 \\ \text{given} \end{matrix} \right\} \text{ to find } a \text{ and } l$$

By Jones's *Synopsis Palmariorum*, p. 159 $a = \frac{2s - nd + nd}{2n}$, 1. *Theor.*

$$l = \frac{2s + nd - nd}{2n}, 2. \text{ *Theor.*$$

Note, 4s. Differences, in the Question, was printed, instead of 4d. correcting the Press Error of 4s. to 4d. and by the foregoing Theorems,

The $\left\{ \begin{matrix} \text{first} \\ \text{last} \end{matrix} \right\}$ Payments $\left\{ \begin{matrix} \text{will be} \end{matrix} \right\} \left\{ \begin{matrix} 23^s, 8461 = 1^l 3^s 10d 2^f, 46 \\ 6, 8461 = 0 6 10 2^f, 46 \end{matrix} \right\}$

$$\frac{52}{2} \times \text{Sum } 30,76922 = 40\text{ } \pounds. \text{ Proof.}$$

Paying by the printed Difference 4s. there would be many negative Repayments by the Creditor to the Debtor; because the Debtor would overpay the Creditor, making so many Payments, and the decreasing Series would consist of a great many negative Quantities, after the affirmative Ones of the Debtor have decreased to which negative Quantities are the Repayments of the Creditor to the Debtor, make the Sum of the Series or Payments, = 40 $\pounds$. from Debtor to Creditor — Manner of Over-Payment, and then Repayment, would be a Disadvantage to Debtor. For Instance, using 3s. for Dif. then by the foregoing Theorems,

The Debtor's first Payment to the Creditor would be $117^s, 38461 = 5^l 17^s 4^d 2^f$
The Creditor's last negative Repayment to the Debtor = $86, 61538 = 4 16 7 1$

$$\frac{52}{2} \times \text{Sum, } 30,76923 = 40\text{ } \pounds. \text{ Proof.}$$

Hence will arise this Question. To pay a given Sum with a given Difference of Increase or Decrease, so as the Payments shall be all affirmative, in a required Number of Payments, or so as the first or last Payment shall be 0.

The Answer will be from substituting the Values of s and d in the foregoing Equations, made = 0, or to a given first or last affirmative Payment, and then find Value of n ; which (when the first or last Payment = 0) is done by equating affirmative Terms with all the negative in the Theorems.

Example. To find the greatest Number (n) of affirmative Payments, to pay at 3s. every Payment less than the former? — This must be when the last Payment is Nothing.

Here, $2s + nd = nd$; or $nn - n = \frac{2s}{d}$, solved $n = \sqrt{\frac{2s}{d} + \frac{1}{4}} : + \frac{1}{2}$

23,5992 Payments. Or, if n be given 52, and d , 3s., to find s ?

Here, $s = \frac{dnn - dn}{2} = 3978s. = 198 \text{ } \pounds. 18s.$ Or, if $s = 800^s$, and

52^w, be given, to find d ? Here $d = \frac{2s}{nn - n} = 60331 \text{ Shil.} = 7^d \text{ of } 95^d$

that if d is greater than 7^d there must be negative Payments.

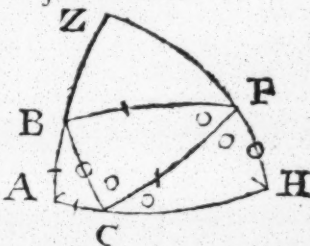
For supposing $d = 1^s$, then the last Payment, = $\frac{2s - nn + n}{2n}$ (where $n =$

and $s = 800$) = 10^s, 096, which is negative.

Mr. John Thompson solved the Question as printed; giving the last negative Payment $-86\frac{1}{2}$. *Chesterfieldensis*, putting 400 *l.* instead of 40 *l.* for the Debt, found the first Payment $= 255^s \frac{1}{13}$, and the last $= 51^s \frac{1}{13}$. Mr. Huntley, putting 400 *l.* instead of 40 *l.* printed, found the first Payment 12 *l.* 16 *s.* and the last 2 *l.* 12 *s.* (each Payment 4 *s.* less than the former) according to the foregoing Theorems. Mr. James Carter likewise solved this Question.

XIV. QUESTION 144, answered by Mr. James Carter.

IN the Triangle ABC there is given $AB = 100$, the Sun's Alt. $AC = 5^\circ 30'$, the Increase of Azimuth fr. Rising, with the $\angle BAC$, a right one; to find BC , and $\angle ACB$? Also, in $\triangle BPC$ we have $BP = CP = 83^\circ 45'$, the Comp. of the Sun's Declin. and BC , before found; to find $\angle s$ BPC,



and ECP. Now, $180^\circ - \angle ACB + \angle BCP = \angle PCP$. Hence, in the $\triangle PCH$, there is given PC , $\angle PCH$, and $\angle PHC$ a right Angle; whence, $PH = 28^\circ 57' 48''$ the Latitude N , and $\angle CPH = 5^h 46' 6''$ the Time of Sun-Rise. $\angle BPH = \angle CPH + \angle BPC = 6^h 31' 58''$, the Time of the second Observation.

Mr. Thomas Huntley answers the foregoing Question, by the *Practical Prop.* in *Palladium* 1758, p. 37. Who determined the Latitude of the Place, $30^\circ 23' 21''$; Time of Sun Rising $5^h 47^m 54^s 24^{th}$, the first Observation; add $43^m 53^s 36^{th}$, which makes $6^h 31^m 48^s$ the Time of the second Observation, required. — *Chesterfieldensis*, by *Trigon. Theorems*, finds the Latitude $28^\circ 58' 25''$; Time of Sun Rise $5^h 45^m 53^s$, the first Observation; add $45^m 52^s$ to which, (according to the Process) gives $6^h 31^m 45^s$, the second Observation. — All mathematical Masters in the Kingdom, are desired to send us their Names, Places of Abode, and Sciences they profess.

QUESTION, answered by Mr. JAMES CARTER, of Clanfield, near Oxford.

1. TO find the New, Full, and Quarter Moons.

FORASMUCH as the Moon's true Longitude may be found, at any Time, by the Method shown at p. 47. of last *Palladium*. If an Equation Table be constructed to show the Differences of the Sun's Equation in the Period of 223 Lunations, or $10^\circ \frac{1}{2}$ Motion of the mean Anomaly of his Orbit, the Distance of the Moon from the Sun will become known at the Completion of the Period; and consequently the Time of Syzygy, or Quadrature, may, from thence, be easily found. But, seeing the Equations, as well as the 1. Equation of the Moon's Orbit in p. 47, *Palladium* depend on the Sun's Anomaly, I have taken their Sum, in Time, according to the mean Motion of the Moon from the Sun, correspondent to the mean Anomaly of the Sun, for every 5th Day; and have also changed the 2. and 3. Equations in *Pall.* 1758, abovementioned, into the said mean Motion, in Minutes and Seconds of Minutes, and altered their Signs, so as to agree with the following Method of Calculation.

RULES of CALCULATION.

1. Find by an Ephemeris the mean Time of New, Full, or Quarter Moon, for 10 Years, 11 Days, before the Time for which the New, Full, or Quarter Moon is required.
2. To the Time above found, add the Period of 18 Yrs. 11 D. $7^h 43' 20''$, remembering to allow for the Alteration of the Style, &c. as in p. 47. *Pall.* 1758.
3. Collect the Sum of the 3 following Equations, answering to the same Arguments as the Equations in p. 47. *Pall.* 1758; then multiply the said Sum by the No. in *Tab.* 4, answering to the Moon's true diurnal Motion; lastly, apply it to the Time above found as the Sign directs, and it will give the mean Time of New, Full, or Quarter Moon sought.

I. EQUATION TABLE. For the New, Full, and Quarter MOONS.

Arg. Day of Month	Jan. +	Feb. +	Mar. +	Apr. -	May -	June -	July -	Aug. -	Sept. -	Oct. +	Nov. +	Dec. +
1	46,1	35,8	18,0	6,0	27,1	41,2	44,5	36,2	18,3	4,5	27,4	44,5
6	45,3	33,1	14,3	9,8	30,0	42,5	43,9	34,0	14,7	8,3	30,5	44,5
11	44,2	30,1	10,4	13,6	32,7	43,5	43,1	31,5	11,0	12,2	33,4	44,5
16	42,8	26,8	6,5	17,2	35,2	44,2	42,0	28,6	7,2	16,0	36,2	44,5
21	41,1	23,4	2,6	20,6	37,4	44,6	40,5	25,6	3,3	19,7	38,7	44,5
26	39,0	19,8	-1,4	23,9	39,3	44,7	38,8	22,4	+6	23,2	40,8	44,5

II. EQUATION TABLE.			III. EQUATION TABLE.				TABLE IV.		
Days fr. Ap. or Per.	Apog. -	Perig. +	Days Arg.	+	Days Arg.	-	Di. Mo C I	No.	
0	34,7	39,8	0 32	7,8	16	8,0	11 30	1,161	
1	34,2	38,9	1 31	7,6	17 15	7,9	12 0	1,108	
2	32,2	35,6	2 30	7,1	18 14	7,5	12 30	1,06	
3	28,7	30,0	3 29	6,4	19 13	6,9	13 0	1,015	
4	23,9	22,9	4 28	5,5	20 12	5,8	13 30	.975	
5	17,9	14,5	5 27	4,3	21 11	4,5	14 0	.937	
6	10,5	6,1	6 26	2,9	22 10	3,2	14 30	.903	
7	2,5	-2,5	7 25	1,4	23 9	1,7	15 0	.87	
			8 24	0,0	24 8	0,0	15 30	.84	

EXAMPLES. To find the Lunations in August 1759.

Ex. 1. To the mean Time of F. Moon in the Year 1741, July 27^d 20^h 33^m N.

1. Eq. for Day -38',4 add the Period 18 Yrs. 11 7 43,3

2. Eq. for 4 Days fr. Perig. +22',9

3. Eq. for 21 Days Arg. -4',5 Sum 1759 Aug. 8 4 16,3

Sum -20, X, 916 for 14° 18' D's daily Mo. gives -18,3

Sum is the mean Time of Full Moon in the Year 1759 Aug. 8 3^h 58^m P.Ex. 2. To the m. Time of L. Q. Moon in the Yr. 1741 Aug. 3^d 12^h 16^m N.

adding the Period 18 Yrs. 11 7 43,3

1. Eq. -35',3 } it gives 1759 Aug. 14 19 59,3

2. Eq. +35',6 } Sum = +5',8 X .881 for D's daily Motion gives +5,1

3. Eq. +5',5 }

Sum is the mean Time of L. Q. Moon in the Year 1759 Aug. 14^d 20^h 4',4Ex. 3. To the m. Time of N. Moon in the Year 1741 Aug. 10^d 21^h 35^m N.

1. Eq. -31', add the Period 18 Yrs. 11 7 43,3

2. Eq. -23,9

3. Eq. +5,5 Sum is the Year 1759 Aug. 22 5 18,3

Sum -49,4 which multiplied by 1,066 for diurnal Motion gives -52,6

Sum is the mean Time of New Moon in 1759 Aug. 22^d 4^h 25^m P.Ex. 4. To the mean Time of F. Q. Moon in 1741 Aug. 19^d 1^h 5^m N.

1. Eq. -24',4 adding the Period 18 Yrs. 11 7 43,3

2. Eq. -23,9

3. Eq. -6,9 it gives 1759 Aug. 30 8 48,3

Sum -55,2 X 1,06 for 12° 30' the Moon's diurnal Mot. gives -58,6

Sum is the mean Time of F. Q. Moon in the Year 1759 Aug. 30^d 7^h 49^m P.

If it be required to compute from apparent to apparent Time, it may easily be done by allowing for the *Difference* of the Equation of Time in 18 Years, 11 Days, &c. according to the Season of the Year.

To find the Moon's Rising and Setting.

1. Find, by an *Ephemeris*, the Time of the Moon's Rising, or Setting, her diurnal Motion, and Place in the Ecliptic both in Long. and Lat. nearly; also the Sum of the 3 Equations in p. 47. *Pall.* 1758, for 18 Years, 11 Days, and the Time for which her Rising, or Setting, is required.

From the Time above found, subtract the Equation in *Tab.* 1. answering to Day of the Month, *New Style*.

Then, this Equation is the Difference of the R. *Ascension* of the Sun in 18 Years,

To the Moon's mean Motion, in the Period, $= 10^{\circ} 48' 10''$, add the Sum of the Equations (above found) and it gives the Moon's true Motion, in Longitude in the Period; then from this Sum subtract $\frac{1}{3}$ of the Moon's diurnal Motion (above found) and it gives her Motion in Long. at the Time of her Rising or Setting, nearly; lastly, multiply this Remainder by No. A, in *Tab.* 2. answering to the Moon's Place in Long. and Lat. at her former Rising or Setting, and it gives the Time of her R. *Ascension* in 18 Yrs. $10^{\text{d}} 23^{\text{h}} 45'$ (the estimate Time of her Rising or Setting) nearly; which is the second Equation of her Rising or Setting, added with an affirmative Sign.

Take out No. B. in *Tab.* 2, answering to the same Arg. as No. A; then the Sum, $6,5$: is to the Degrees and Decimals of the Moon's Mot. in Long. at her Rising or Setting, found by Rule 3, :: so is No. B. to the third Equation of the Moon's Rising or Setting; which in these Signs ♊ , ♋ , ♌ , ♍ , ♎ and ♏ , subtracted for Rising, and added for Setting; or in these Signs ♐ , ♑ , ♒ , ♓ , ♈ and ♉ , added for Rising, and subtracted for Setting, gives the true Time of Rising or Setting required.

This *Equat.* (serving for Lat. of Greenwich Observatory, or London, only) Diff. of the Moon's *Ascensional* Diff. in 18 Yr. $10^{\text{d}} 23^{\text{h}} 45'$, the Moon is supposed not to have altered her Latitude.

I. EQUATION TABLE. Of the Moon's Rising and Setting.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1	1	1	1	1	1	1	1	1	1	1
$46 \frac{1}{2}$	$42 \frac{1}{2}$	39	39	$41 \frac{1}{2}$	44	$43 \frac{1}{2}$	$41 \frac{1}{2}$	$38 \frac{1}{2}$	39	43	$46 \frac{1}{2}$
46	42	39	39	$41 \frac{1}{2}$	44	$43 \frac{1}{2}$	$40 \frac{1}{2}$	$38 \frac{1}{2}$	$39 \frac{1}{2}$	$43 \frac{1}{2}$	47
$45 \frac{1}{2}$	$41 \frac{1}{2}$	$38 \frac{1}{2}$	$39 \frac{1}{2}$	42	$44 \frac{1}{2}$	$43 \frac{1}{2}$	40	$38 \frac{1}{2}$	40	44	$47 \frac{1}{2}$
45	$40 \frac{1}{2}$	38	$39 \frac{1}{2}$	$42 \frac{1}{2}$	$44 \frac{1}{2}$	$42 \frac{1}{2}$	$39 \frac{1}{2}$	$38 \frac{1}{2}$	$40 \frac{1}{2}$	45	47
44	40	38	40	43	44	42	39	$38 \frac{1}{2}$	41	$45 \frac{1}{2}$	$47 \frac{1}{2}$
$43 \frac{1}{2}$	$39 \frac{1}{2}$	$38 \frac{1}{2}$	$40 \frac{1}{2}$	$43 \frac{1}{2}$	44	$41 \frac{1}{2}$	$38 \frac{1}{2}$	$38 \frac{1}{2}$	42	46	$47 \frac{1}{2}$

Light travels, in Time, like Sound, but vastly swifter. Master Longley of *Middlesex*, under 10 Years of Age, at Mr. Burgh's School, at *Middlesex*, has confuted a Sixpenny Chatham Author, who wrote against Sir I. Newton's Philosophy, and math. Demonstration. As another Sixpenny Author, before this list, wrote on the Unreasonableness of Religion.—Pshaw!

Enquire at Jonathan's Coffee-House, near the Royal-Exchange, London, for Astron. Tabs. from Greenwich Observations (3 Sheets) by Mr. Gael Morris.

Supernumerary Query, by Mr. G. Stapley.
Borough of 52 Freemen, at a general Election, where but two Candidates offer, artfully promise a third Person, that if he will offer himself a Candidate for him, at the same time they and the other Freemen are as much as possible of the other two Candidates. Quere, Whether the third Candidate, if he is certain of carrying his Election with 34 Votes: Each Freeman having

TABLE

TABLE II. Of the Moon's Rising and Setting.

Lon. D's	Lat. 5° N.		Lat. o.		Lat. 5° S.		Lon. D's	Lat. 5° N.		Lat. o.		Lon. D's
	No. A.	No. B.	No. A.	No. B.	No. A.	No. B.		No. A.	No. B.	No. A.	No. B.	
S °							S °					
♈ °	3,67	13,5	3,67	13,	3,67	13,	♈ °	3,67	13,	3,67	13,	
10	3,72	13,5	3,69	13,	3,97	13,	10	3,67	13,	3,69	13,	
20	3,80	13,5	3,76	12,5	3,72	12,	20	3,72	12,	3,76	12,5	
♉ °	3,90	13,5	3,84	12,	3,78	11,	♉ °	3,78	11,	3,84	12,	
10	4,05	13,	3,96	11,5	3,88	10,	10	3,88	10,	3,96	11,5	
20	4,18	12,	4,08	10,	3,96	8,5	20	3,96	8,5	4,08	10,	
♊ °	4,32	10,	4,20	8,	4,05	7,	♊ °	4,05	7,	4,20	8,	
10	4,45	7,5	4,29	5,5	4,14	5,	10	4,14	5,	4,29	5,5	
20	4,52	3,5	4,34	2,5	4,19	2,	20	4,19	2,	4,34	2,5	
♋ °	4,52	1,5	4,36	1,	4,20	,5	♋ °	4,20	,5	4,36	1,	
10	4,48	6,	4,32	4,5	4,17	3,5	10	4,17	3,5	4,32	4,5	
20	4,38	9,	4,14	7,	4,10	6,	20	4,10	6,	4,24	7,	
♌ °	4,26	12,	4,12	10,	4,02	,5	♌ °	4,02	,5	4,12	10,	
10	4,10	13,	4,00	11,5	3,92	10,	10	3,92	10,	4,00	11,5	
20	3,96	15,5	3,88	12,	3,82	11,	20	3,82	11,	3,88	12,	
♍ °	3,85	13,5	3,80	12,5	3,72	12,	♍ °	3,72	12,	3,80	12,5	
10	3,75	13,5	3,72	13,	3,68	13,	10	3,68	13,	3,72	13,	
20	3,68	13,5	3,68	13,	3,68	13,	20	3,68	13,	3,68	13,	
♎ °	3,67	13,5	3,67	13,	3,67	13,	♎ °	3,67	13,	3,67	13,	

EXAMPLE. To find the Moon's Rising and Setting on April, 10, 1759.
From the given Time, subtracting 18 Years, 11 Days, it gives March 20
N. S. On which Day the Moon rose at 4^h 28', and set at 17^h 52' P. M.
The Equation for the Day is — 39'.

☽'s mean Motion in the Period . . . = 10° 48' 10"

Sum of Equations in p. 47. *Pall.* 1758 . . . + 14 13

Sum ☽'s Mot. in Long. in the Period = 11° 2' 23"

Subtracting $\frac{1}{3}$ of ☽'s diurnal Motion . . . = 3 58 40

Remains the Moon's Mot. in Long. at } 7° 3' 43" = 7,06 in D.
her Rising or Setting }

which multiplied by No. A. in Tab. 2. answering to the Moon's Place 17° 52' N. gives 26' *ferè*, for the 2d Equation of her Rising, which in this will also serve for Setting.

Now say, as 6,5 : 7,06 :: No. B = 13,5 : 14 $\frac{1}{2}$ the 3d Equation of Rising, which in the *present Case* also serves for Setting.

Hence, by the	}	4 ^h 28'	17 ^h 52'
above Rules		— 39	— 39
		+ 26	+ 26
		+ 14 $\frac{1}{2}$	— 14 $\frac{1}{2}$

the Moon rises at 4^h 29 $\frac{1}{2}$, and sets at 17^h 24 $\frac{1}{2}$ P. M. on April



*** Mr. James Carter, of Clanfield, near Oxford, this Year, as in the servedly claims the Honour of the Laurel, and the Reward of solving the Prize having no Competitor! — To whom all Astronomers are obliged for his excellent

I. PARADOX unanswered.

The Proposer, in a Letter dated 28 April, 1755, says, that a Gentleman near
 an Estate, being not able to prove his Grandmother's Name; yet had
 Pedro to trace the Pedigree of his Horses, for many Generations, from *Dam*
Grandam, and *Great Grandam*; and then to *Great Great Grandam*, &c.
 these Reasons he sent us his PARADOXES, on common Descents— But the
 PARADOX waits his Answer, we having not received the Honour of any Thing
 this Year.

II. PARADOX, answered by Mr. Smith.

The direct Road S. lies through a Valley; and towards the East 'tis horizon-
 tal. That the nearest Road to a House seen South crosses the Valley, is
 a Mile S. by E. and another S. by W. along the Brow of the Hill.

EQUATIONS for reducing the Mean Places had by our *Astronomical TABLES*, in *Palladium*,
 1757, to other M. Places, and the contrary. According to different Authorities.

Names of different Authorities.	Eqn of the ☉'s M. Places.					Eqn of ☉'s M. Mot. for 100 Yrs forward fr. 1700				
	Eqn ☉ M. Pl.	Eqn ☉ M. An.	Eqn ☉ Ap.	Eq. M. 1 * 7	Eq. mo. ☉ m Pl.	Eq. Mot. ☉ M. An.	Eq. Mot. ☉ Ap.	Eq. Mo. 1 * 7	Eq. Mo. 1 * 7	Eq. Mo. 1 * 7
Newton	+0 7	-5 13	+5 20		-12 0	+1 18	-1 30	-0 50	-0 50	-0 50
Hally	0 0	0 0	0 0	0 0	+0 20	+1 23	-1 22 40	-0 50	-0 50	-0 50
Morris's <i>sec. Tab.</i>	+0 27	-3 51	+4 18		0 0	-5 50	+5 50			
Mayer	-2 0	-6 18	+6 20		+14 40	-2 15 20	+2 30	+0 10	+0 10	+0 10
Euler	-2 2	-28 33	+26 31		+23 0	+17 8	-16 40	+0 10	+0 10	+0 10
<i>Astronomia Accurata</i>	+0 10	-5 10	+5 20		0 0	0 0	0 0	0 0	0 0	0 0

N. B. The same Signs are used for Time back as for Time forward for M. Places equated, but contrary Signs to those for Time forward for Mot. equated.

Car off 4 Fig: to the Right, fr. Secs or Quants for 100 Yrs, for Eq. for 1 Yr, which X'd by Yrs fr. 1700, will give the whole Eq. of Mot. req.

EXAMPLES. By p. 52. *Palladium*, 1757.

☉'s M. Pl. ☉'s M. An. thence.

O. S. 1732, Jan. 30, Noon	105 19° 47' 29" 3s	8° 11' 2"	75 110 30' 27" Pal. 1757.
Eq. ☉ Pl. 1700	+	0 27	+4 18
Eq. Ap. Mo. 32 Yrs fr. 1700	0	0	0
Reduced to Morris's Plac. last	10 19	47 56	3 8 17 12
Fr. Morris's Tables 1732	9 21 12 54 3	2 8 17 7	7 11 30 44
Jan. 29, B. 28	23 35 2	5 8 17 5	10 21 5 48
Proof	13 19 47 56	8 17 12	10 21 5 48

Tab. p. 55.

☉'s M. An.

by Morris's Tab.

to know this Year for Diary Solitions, &c.

Names of different Authorities.	Constant Equation of the $\mathcal{D}$'s Mean Places.				Equat. of $\mathcal{D}$'s M. Mo. Century forward fr. 17		
	Eq. $\mathcal{D}$	Eq. $\mathcal{D}$	Eq. $\mathcal{D}$	Eq. $\mathcal{D}$'s	Eq. Mo.	Eq. M.	Eq. Mo $\mathcal{D}$
	M. Pl.	M. An.	M. Ap.	$\mathcal{S}$	$\mathcal{D}$ m. Pl.	$\mathcal{D}$ m. an.	Ap.
	1 "	1 "	1 "	1 "	1 "	1 "	1 "
Newton	-0 10	-6 10	+6 0	-0 10	0 0	0 0	0 0
Halley	-1 10	-7 10	+6 0	-1 10	0 0	0 0	0 0
Morris's f. Ta. & G.	-0 49	+3 54	-4 43	+1 50	+3 5	0 0	+3 5
Mayer	-0 20	-4 14	+3 54	+4 3	+1 55	+1 55	0 0
Euler	+0 20	+7 50	-7 30	+1 50	0 0	0 0	0 0
Astronomia Accur.	0 0	+3 0	-3 0	0 0	0 0	0 0	0 0
N. B. The contr. Sig ^s . reduce to Pallad. M. Pls. connecting the Quantities for Places and Motion.					Accelerat. $\mathcal{D}$ fr. 1750 or 100 Yrs. forward or from that Date.		
* * If you change the Sign of a Quantity and add it to another of like Denom. in the same Col. the Sum, or Result, will reduce the Tables of the Sign changed to the Tables of the Quantity connected.					+12"	+24"	-12"
					The above Sig ^s . are well before as after 1750 Quantities being always Square of the Centuries Parts of Centuries, fr.		

HENCE, *After the Reduction to Morris's M. Places, take the Year, for the Computation of the Places is to be made, from 1750, if for Time back, or from the forward Date, and cut off 2 Figures to the Right Hand of the Rate for the Centuries, and Centesimal Parts, or Centesimal Parts of one Century, being squared and multiplied into 12"* (answering to the Acceleration for the of 1 Century) *will give the Number of Secs. of a Deg. for the Moon's Place in that Time, to be always added to her mean Place found by the Tables. The always to be subtracted fr. the Place of the $\mathcal{D}$'s M. Apogee; and the Double of is always to be added to $\mathcal{D}$'s M. Anomaly; and $\frac{1}{2}$ of this Acceleration for $\mathcal{D}$ always to be added to the Mean Place $\mathcal{S}$, for that Acceleration, according to the proportions in the Equation Table before given.—N.B. The Moon, by Observation accelerated nearly at the above Rate; thereby augmenting more and more her places, or M. Places arrived at, the farther we go back into Antiquity, or into Futurity, from a given Mean Place to a given Year, or Point of Time nearly equable Motion. This is evidently made appear by drawing a Line Ways from a given Point, to represent Antiquity and Futurity, dividing it into and then into Increments from Antiquity to Futurity.*

To reduce the Moon's mean Places to Morris's Places.

Ex. By Page 59, Palladium 1757.

	$\mathcal{D}$'s M. Pl.				$\mathcal{D}$'s Ap.				$\mathcal{S}$.				
	s	o	'	"	s	o	'	"	s	o	'	"	
N.S. 1896 Jan. 23, Noon	1	12	41	58	11	24	23	28	11	5	12	0	Pall.
Eq. $\mathcal{D}$'s Pl. 1700			-0	49			-4	43			+1	50	by p.
Eq. $\mathcal{D}$ Mo. Yrs. 196 fr. 1700			+6	3			+6	3			+6	3	Pall.
3' 5" = 1,85"													
196													
36 2", 6													
+6' 3"													
	1	12	47	12	11	24	24	48	11	5	19	53	reduced
	11	24	24	48									[M]
	1	18	22	24									$\mathcal{D}$ M. An. according to Morris's

See our *Astronomia Accurata* (almost printed off) for further Improvement

ABSC

ABSOLUTE EQUATION of TIME for the Sun's Apogee in $\sigma 90^\circ$ (about 1774)
and Ediptic Obliquity $23^\circ 28'$. Eccentricity $\ominus$ Orbit 1682 to 10000 M. Diff.

Argumen. SUN's true PLACE in the ECLIPTIC.

φ	0	1	2	3	4	5	6	7	8	9	10	11	12
A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.	A.M.
+	+	+	+	+	+	+	+	+	+	+	+	+	+
m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.
7 30	1 9	3 51	1 13	5 57	2 20	7 58	15 31	13 33	1 11	11 28	14 19		
7 17	1 23	3 47	1 26	5 50	2 4	7 58	15 39	13 17	0 42	11 45	14 13		
6 58	1 36	3 42	1 40	6 0	1 48	8 19	15 46	13 0	0 12	12 1	14 6		
									+				
6 39	1 48	3 37	1 53	6 11	1 31	8 40	15 52	12 42	0 17	12 17	13 59		
6 20	2 0	3 32	2 7	6 11	1 1	9 1	15 57	12 23	0 46	12 32	13 51		
6 1	2 11	3 26	2 20	6 0	0 56	9 21	16 2	12 4	1 16	12 46	13 43		
5 42	2 22	3 19	2 33	5 50	0 38	9 41	16 6	11 44	1 45	12 59	13 34		
5 24	2 32	3 12	2 45	5 57	0 20	10 1	16 9	11 23	2 14	13 12	13 24		
5 5	2 42	3 4	2 58	5 54	0 1	10 20	16 11	11 1	2 45	13 24	13 14		
									+				
4 47	2 51	2 56	3 11	5 51	0 18	10 39	16 13	10 39	3 11	13 35	13 3		
4 28	3 0	2 47	3 23	5 47	0 37	10 57	16 13	10 16	3 39	13 45	12 51		
4 9	3 8	2 38	3 35	5 42	0 57	11 15	16 13	9 53	4 7	13 54	12 39		
3 50	3 16	2 29	3 46	5 37	1 17	11 33	16 12	9 29	4 35	14 2	12 27		
3 32	3 23	2 19	3 58	5 31	1 38	11 51	16 10	9 5	5 2	14 0	12 14		
3 13	3 30	2 8	4 9	5 24	1 58	12 8	16 7	8 40	5 29	14 16	12 0		
2 55	3 36	1 57	4 19	5 17	2 19	12 26	16 4	8 14	5 56	14 22	11 46		
2 37	3 41	1 46	4 29	5 9	2 40	12 41	16 0	7 48	6 22	14 27	11 31		
2 19	3 46	1 35	4 39	5 13	1 12	12 57	15 55	7 22	6 48	14 31	11 16		
2 1	3 50	1 23	4 48	4 52	3 22	13 12	15 49	6 55	7 13	14 35	11 1		
1 43	3 53	1 11	4 57	4 43	3 44	13 27	15 42	6 28	7 37	14 38	10 46		
1 26	3 56	0 59	5 5	4 33	4 5	13 42	15 35	6 0	8 1	14 40	10 30		
1 9	3 58	0 46	5 13	4 22	4 26	13 56	15 26	5 32	8 24	14 41	10 14		
0 52	4 0	0 34	5 20	4 11	4 47	14 9	15 17	5 4	8 47	14 42	9 58		
0 36	4 10	0 21	5 27	3 59	5 9	14 21	15 7	4 36	9 9	14 41	9 41		
0 20	4 10	8	5 33	3 46	5 30	14 33	14 56	4 8	9 31	14 40	9 24		
									+				
0 4	4 10	5 5 30	3 33	5 52	14 44	14 44	3 39	9 53	14 39	9 6			
0 11	4 00	19	5 44	3 19	6 13	14 55	14 31	3 10	10 14	14 37	8 48		
0 26	3 59	0 32	5 48	3 46	6 35	15 5	14 17	2 41	10 34	14 34	8 30		
0 40	3 57	0 46	5 52	5 6	6 56	15 14	14 3	2 11	10 53	14 30	8 12		
0 55	3 54	0 59	5 55	2 35	7 17	15 23	13 48	1 41	11 11	14 25	7 54		
1 0	3 51	1 11	5 5	2 20	7 38	15 31	13 33	1 11	11 28	14 19	7 36		

For 10 or the Sun's Apogee, from the $\odot$ Ap. $\sigma 90^\circ$ either Increase or Decr.

In. De.	In. De.	In. De.	In. De.	In. De.	In. De.	In. De.	In. De.	In. De.	In. De.	In. De.	In. De.	In. De.	In. De.
+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sec.	Sec.	Sec.	Sec.	Sec.	Sec.	Sec.	Sec.	Sec.	Sec.	Sec.	Sec.	Sec.	Sec.
0 1	3	6	8	7	5	80, 1	3	6	8	8	8	5	
10, 0	4	7	8	7	5	0 +	4	7	8	7	4		
1	5	7	8	6	4	1	5	7	8	7	3		
2	5	8	8	6	5	1	5	8	8	6	3		
2	6	8	8	5	2	2	6	8	8	5	2		

TABLE of the *Rad.* Mean Places and Motions of the SUN. According to Secret Tables (in the Hands of Mr. *Gael Morris*) constructed for *Greenwich* Observatory

Julian or Old Style.				Gregorian or New Style.			
Yrs of Chr.	M. Place ☉	M. Pl Ap. ☉		Years of Chr.	M. Place ☉	M. Pl Ap. ☉	
Bef. Chr. 1	9 ^s 80 4' 16"	2 ^s 70 0' 47"		B. 1600	9 ^s 10° 21' 25"	3 ^s 5' 53"	
Chr. } s. } 1600 1700 1740	9 20 12 48	3 5 54 7		C. 1700	9 10 7 49	3 7 42	
	9 20 58 20	3 7 42 27		B. 1760	9 10 35 8	3 8 47	
	9 21 16 33	3 8 25 47		C. 1800	9 9 54 11	3 9 30	
Cs. Yrs. Ju.	M. Mot ☉	M. M Ap ☉		Years Julian.	M. Mot ☉	M. M Ap ☉	
100	0 ^s 0° 45' 32"	0 ^s 10 48' 20"		700	0 ^s 5° 18' 44"	0 ^s 12° 38'	
200	0 1 31 4	0 3 36 40		800	0 6 4 16	0 14 26	
300	0 2 16 36	0 5 25 0		900	0 6 49 48	0 16 15	
400	0 3 2 8	0 7 13 20		1000	0 7 35 20	0 18 5	
500	0 3 47 40	0 9 1 40		2000	0 15 10 40	1 6 6	
600	0 4 33 12	0 10 50 0		3000	0 22 46 0	1 24 10	

und. Cs. Yrs	Mo ☉	Ap. ☉	y s	Mo ☉	Ap. ☉	y s	Mo ☉	Ap. ☉	y s	Mo ☉	Ap. ☉	y s
☉ Mo.	1 14' 20"	1' 5"	7 41' 10"	7' 35"	13 8' 52"	14' 5"	19 35' 42"	20				
Sub.	2 28 40	2 10	* 8 3 39	8 40	14 23 12	15 10	* 20 9 6	21				
Mot.	3 42 59	3 15	9 10 41	9 45	15 37 31	16 15	* 40 18 13	22				
aga. *	* 4 1 49	4 20	10 25 1	10 50	* 16 7 17	17 20	* 60 27 19	23				
for T.	5 12 31	5 25	11 39 21	11 55	17 7 3	18 25	* 80 36 26	24				
forwd.	6 26 50	6 30	* 12 5 28	13 0	18 21 22	19 30	* agst 4th Y					

Months.	M. Mot. ☉	Ap.	Months.	M. Mot. ☉	Ap.	Months.	M. Mot. ☉	Ap.
Jan. 0	0 ^s 0° 0' 0"	0"	May 0	3 ^s 28° 16' 40"	21"	Sept. 0	7 ^s 29° 30' 44"	
Feb. 0	1 0 33 18	5	June 0	4 28 49 58	27	Octo. 0	8 29 4 54	
Mar. 0	1 20 9 11	10	July 0	5 28 24 8	32	Nov. 0	9 29 38 12	
Apr. 0	2 28 42 30	16	Aug. 0	6 28 57 26	38	Dec. 0	10 29 12 22	

In Leap Year take out 1 Day less for Jan. and Feb.											
D. M. M. ☉			Ap.	D. M. M. ☉			Ap.	H			H
0 1 "			"	0 1 "			"	M " " "			M " " "
								S " " "			S " " "
1	0 59 8	0	16	15 46 13	3	1	2 28 16	39 26	31	1 16 23	46
2	1 58 17	0	17	16 45 22	3	2	4 56 17	41 53	32	1 18 51	47
3	2 57 25	1	18	17 44 30	3	3	7 24 18	44 21	33	1 21 19	48
4	3 56 33	1	19	18 43 38	3	4	9 51 19	46 49	34	1 23 47	49
5	4 55 42	1	20	19 42 47	4	5	12 19 20	49 17	3	1 26 14	50
6	5 44 50	1	21	20 41 55	4	6	14 47 21	51 45	36	1 28 42	51
7	6 53 58	1	22	21 41 3	4	7	17 15 22	54 13	37	1 31 10	52
8	7 53 7	1	23	22 40 12	4	8	19 43 23	56 40	38	1 33 38	53
9	8 52 15	2	24	23 39 20	4	9	22 11 24	59 8	39	1 36 6	54
10	9 51 23	2	25	24 38 28	4	10	24 38 25	61 36	40	1 38 34	55
11	10 50 32	2	26	25 37 57	5	11	27 6 26	64 4	41	1 41 1	56
12	11 49 40	2	27	26 36 45	5	12	29 34 27	66 32	42	1 43 29	57
13	12 48 48	2	28	27 35 53	5	13	32 2 28	69 0	43	1 45 57	58
14	13 47 57	2	29	28 35 2	5	14	34 30 29	71 27	44	1 48 25	59
15	14 47 5	3	30	29 34 10	5	15	36 58 30	73 55	45	1 50 53	60
			31	30 33 18	6						

☉ The Mot. for 4th Yrs above 20 Yrs must be added after the Mot. for 20 Yrs then the Mot. und. 20 Yrs to make up the Date, and the same in Mot. subtrah.

N. B. The ☉'s M. Mot. for Yrs under 100, agt *, or 4th Yrs adds, but for 100 Yrs not agt *, it subtrahs for Time forwd, and the contrary for Time back, the Rad. Time. All other Mot. for Time forwd adds, and subtrahs for Time back.

EQUATION of the SUN's CENTER.

According to Eccentricity of $\oplus$'s Orbit 1682 to Mean Distance a $\odot$ 100000.

Argument. SUN's Mean Anomaly.

[illegible]

*We should have taken Notice in last Palladium, that Mr. Alexander Rowe, of
Cornwall, judiciously observed that one great Use of Saturn's Ring, (being
a very dense and compact Substance) is to reflect Heat and Light on the Body of Saturn,
and consequently cold and gloomy Region.*

TABLE of the *Rad. M. Places and Motions* of the MOON. According to *Solar*
Tables (in the Hands of Mr. *Gael Morris*) constructed for *Greenwich* Observations.

Julian or Old Style.			
Yrs or Chr.	M. Place D.	M. Pl. D An	M. Pl. D Afr.
Chr. } 1600	11 ⁵ 21 ⁰ 47' 48	3 ⁵ 21 ⁰ 16' 1	9 ⁵ 17 ⁰ 4' 53
1700	7 28 3 48	1 19 42 41	10 0 54 13
1700	6 5 57 1	8 8 21 51	5 16 46 3
1740	3 3 6 4	10 27 49 31	3 23 6 47
Gregorian or New Style.			
B. 1600	3 ⁵ 16 ⁰ 17' 58	9 ⁵ 9 ⁰ 3' 41	10 ⁵ 10 ⁰ 25' 59
C. 1700	1 11 0 53	3 14 38 57	5 17 21 0
B. 1760	2 21 44 59	7 13 50 27	2 26 52 6
C. 1800	11 5 43 47	9 20 14 13	1 3 16 0
Cs Yrs Jul.	M. Mot. D.	M. Mot D An	M. M. D retr.
100	10 7 53 30	6 18 39 10	4 14 8 10
200	8 15 47 0	1 7 18 20	8 28 16 20
300	6 23 40 30	7 25 57 30	1 12 24 30
400	5 1 34 0	2 14 56 40	5 26 32 40
500	3 9 27 30	9 3 15 50	10 10 40 50
600	1 17 21 0	3 21 55 0	2 24 49 0
700	11 25 14 30	10 10 34 10	7 8 57 10
800	10 3 8 0	4 29 13 20	11 23 5 20
900	8 11 1 30	11 47 52 30	4 7 13 30
1000	6 18 55 0	6 6 31 40	8 21 21 40
2000	1 7 50 0	0 13 3 20	5 12 43 20
3000	7 26 45 0	6 19 35 0	2 4 5 0
1	4 9 23 5	2 28 43 13	0 19 19 41
2	8 18 46 11	5 27 26 26	1 8 39 22
3	0 28 9 16	8 26 9 39	1 27 59 4
4	5 20 42 56	0 7 56 46	2 17 21 56
5	10 0 6 2	3 6 39 59	3 6 41 37
6	2 9 29 7	6 5 23 12	3 26 1 18
7	6 18 52 12	9 4 6 25	4 15 20 59
8	11 11 25 53	0 15 53 32	5 4 43 51
9	3 20 48 58	3 14 56 45	5 24 3 32
10	8 0 12 3	6 13 19 58	6 13 23 14
11	0 9 35 9	9 12 3 11	7 2 42 55
12	5 2 8 49	0 23 50 18	7 22 5 47
13	9 11 31 54	3 22 33 31	8 11 25 28
14	1 20 55 0	6 21 16 44	9 0 45 9
15	6 0 18 5	9 19 59 57	9 20 4 50
16	10 22 51 46	1 1 47 4	10 9 27 42
17	3 2 14 51	4 0 30 17	10 28 47 24
18	7 11 37 56	6 29 13 30	11 18 7 5
19	11 21 1 1	9 27 56 43	0 7 26 46
20	4 13 34 42	1 9 43 50	0 26 49 58
40	8 27 9 24	2 19 27 40	1 23 39 10
60	1 10 44 6	3 29 11 50	2 20 28 54
80	5 24 18 48	5 8 55 20	3 17 18 32
M. Mo. D retr.	M. Mo. D retr.	M. Mo. D retr.	M. Mo. D retr.
5 0 1 5	5 0 1 5	5 0 1 5	5 0 1 5
0 9 35 5	0 9 35 5	0 9 35 5	0 9 35 5
0 11 13 34	0 11 13 34	0 11 13 34	0 11 13 34
0 12 52 23	0 12 52 23	0 12 52 23	0 12 52 23
0 14 27 23	0 14 27 23	0 14 27 23	0 14 27 23
0 16 5 53	0 16 5 53	0 16 5 53	0 16 5 53
M. Mo. An. D	M. Mo. An. D	M. Mo. An. D	M. Mo. An. D
5 0 1 5	5 0 1 5	5 0 1 5	5 0 1 5
6 24 45 46	6 24 45 46	6 24 45 46	6 24 45 46
8 9 46 38	8 9 46 38	8 9 46 38	8 9 46 38
9 24 47 31	9 24 47 31	9 24 47 31	9 24 47 31
10 26 44 29	10 26 44 29	10 26 44 29	10 26 44 29
0 11 45 22	0 11 45 22	0 11 45 22	0 11 45 22
M. Mot. D	M. Mot. D	M. Mot. D	M. Mot. D
5 0 1 5	5 0 1 5	5 0 1 5	5 0 1 5
7 14 55 40	7 14 55 40	7 14 55 40	7 14 55 40
9 3 23 46	9 3 23 46	9 3 23 46	9 3 23 46
10 21 51 23	10 21 51 23	10 21 51 23	10 21 51 23
11 27 0 23	11 27 0 23	11 27 0 23	11 27 0 23
12 32 10 23	12 32 10 23	12 32 10 23	12 32 10 23
13 37 20 23	13 37 20 23	13 37 20 23	13 37 20 23
14 42 30 23	14 42 30 23	14 42 30 23	14 42 30 23
15 47 40 23	15 47 40 23	15 47 40 23	15 47 40 23
16 52 50 23	16 52 50 23	16 52 50 23	16 52 50 23
17 58 0 23	17 58 0 23	17 58 0 23	17 58 0 23
18 0 10 23	18 0 10 23	18 0 10 23	18 0 10 23
19 0 20 23	19 0 20 23	19 0 20 23	19 0 20 23
20 0 30 23	20 0 30 23	20 0 30 23	20 0 30 23
21 0 40 23	21 0 40 23	21 0 40 23	21 0 40 23
22 0 50 23	22 0 50 23	22 0 50 23	22 0 50 23
23 1 0 23	23 1 0 23	23 1 0 23	23 1 0 23
24 1 10 23	24 1 10 23	24 1 10 23	24 1 10 23
25 1 20 23	25 1 20 23	25 1 20 23	25 1 20 23
26 1 30 23	26 1 30 23	26 1 30 23	26 1 30 23
27 1 40 23	27 1 40 23	27 1 40 23	27 1 40 23
28 1 50 23	28 1 50 23	28 1 50 23	28 1 50 23
29 2 0 23	29 2 0 23	29 2 0 23	29 2 0 23
30 2 10 23	30 2 10 23	30 2 10 23	30 2 10 23
31 2 20 23	31 2 20 23	31 2 20 23	31 2 20 23
32 2 30 23	32 2 30 23	32 2 30 23	32 2 30 23
33 2 40 23	33 2 40 23	33 2 40 23	33 2 40 23
34 2 50 23	34 2 50 23	34 2 50 23	34 2 50 23
35 3 0 23	35 3 0 23	35 3 0 23	35 3 0 23
36 3 10 23	36 3 10 23	36 3 10 23	36 3 10 23
37 3 20 23	37 3 20 23	37 3 20 23	37 3 20 23
38 3 30 23	38 3 30 23	38 3 30 23	38 3 30 23
39 3 40 23	39 3 40 23	39 3 40 23	39 3 40 23
40 3 50 23	40 3 50 23	40 3 50 23	40 3 50 23
41 4 0 23	41 4 0 23	41 4 0 23	41 4 0 23
42 4 10 23	42 4 10 23	42 4 10 23	42 4 10 23
43 4 20 23	43 4 20 23	43 4 20 23	43 4 20 23
44 4 30 23	44 4 30 23	44 4 30 23	44 4 30 23
45 4 40 23	45 4 40 23	45 4 40 23	45 4 40 23
46 4 50 23	46 4 50 23	46 4 50 23	46 4 50 23
47 5 0 23	47 5 0 23	47 5 0 23	47 5 0 23
48 5 10 23	48 5 10 23	48 5 10 23	48 5 10 23
49 5 20 23	49 5 20 23	49 5 20 23	49 5 20 23
50 5 30 23	50 5 30 23	50 5 30 23	50 5 30 23
51 5 40 23	51 5 40 23	51 5 40 23	51 5 40 23
52 5 50 23	52 5 50 23	52 5 50 23	52 5 50 23
53 6 0 23	53 6 0 23	53 6 0 23	53 6 0 23
54 6 10 23	54 6 10 23	54 6 10 23	54 6 10 23
55 6 20 23	55 6 20 23	55 6 20 23	55 6 20 23
56 6 30 23	56 6 30 23	56 6 30 23	56 6 30 23
57 6 40 23	57 6 40 23	57 6 40 23	57 6 40 23
58 6 50 23	58 6 50 23	58 6 50 23	58 6 50 23
59 7 0 23	59 7 0 23	59 7 0 23	59 7 0 23
60 7 10 23	60 7 10 23	60 7 10 23	60 7 10 23
61 7 20 23	61 7 20 23	61 7 20 23	61 7 20 23
62 7 30 23	62 7 30 23	62 7 30 23	62 7 30 23
63 7 40 23	63 7 40 23	63 7 40 23	63 7 40 23
64 7 50 23	64 7 50 23	64 7 50 23	64 7 50 23
65 8 0 23	65 8 0 23	65 8 0 23	65 8 0 23
66 8 10 23	66 8 10 23	66 8 10 23	66 8 10 23
67 8 20 23	67 8 20 23	67 8 20 23	67 8 20 23
68 8 30 23	68 8 30 23	68 8 30 23	68 8 30 23
69 8 40 23	69 8 40 23	69 8 40 23	69 8 40 23
70 8 50 23	70 8 50 23	70 8 50 23	70 8 50 23
71 9 0 23	71 9 0 23	71 9 0 23	71 9 0 23
72 9 10 23	72 9 10 23	72 9 10 23	72 9 10 23
73 9 20 23	73 9 20 23	73 9 20 23	73 9 20 23
74 9 30 23	74 9 30 23	74 9 30 23	74 9 30 23
75 9 40 23	75 9 40 23	75 9 40 23	75 9 40 23
76 9 50 23	76 9 50 23	76 9 50 23	76 9 50 23
77 10 0 23	77 10 0 23	77 10 0 23	77 10 0 23
78 10 10 23	78 10 10 23	78 10 10 23	78 10 10 23
79 10 20 23	79 10 20 23	79 10 20 23	79 10 20 23
80 10 30 23	80 10 30 23	80 10 30 23	80 10 30 23
81 10 40 23	81 10 40 23	81 10 40 23	81 10 40 23
82 10 50 23	82 10 50 23	82 10 50 23	82 10 50 23
83 11 0 23	83 11 0 23	83 11 0 23	83 11 0 23
84 11 10 23	84 11 10 23	84 11 10 23	84 11 10 23
85 11 20 23	85 11 20 23	85 11 20 23	85 11 20 23
86 11 30 23	86 11 30 23	86 11 30 23	86 11 30 23
87 11 40 23	87 11 40 23	87 11 40 23	87 11 40 23
88 11 50 23	88 11 50 23	88 11 50 23	88 11 50 23
89 12 0 23	89 12 0 23	89 12 0 23	89 12 0 23
90 12 10 23	90 12 10 23	90 12 10 23	90 12 10 23
91 12 20 23	91 12 20 23	91 12 20 23	91 12 20 23
92 12 30 23	92 12 30 23	92 12 30 23	92 12 30 23
93 12 40 23	93 12 40 23	93 12 40 23	93 12 40 23
94 12 50 23	94 12 50 23	94 12 50 23	94 12 50 23
95 1 0 23	95 1 0 23	95 1 0 23	95 1 0 23
96 1 10 23	96 1 10 23	96 1 10 23	96 1 10 23
97 1 20 23	97 1 20 23	97 1 20 23	97 1 20 23
98 1 30 23	98 1 30 23	98 1 30 23	98 1 30 23
99 1 40 23	99 1 40 23	99 1 40 23	99 1 40 23
100 1 50 23	100 1 50 23	100 1 50 23	100 1 50 23
101 2 0 23	101 2 0 23	101 2 0 23	101 2 0 23
102 2 10 23	102 2 10 23	102 2 10 23	102 2 10 23
103 2 20 23	103 2 20 23	103 2 20 23	103 2 20 23
104 2 30 23	104 2 30 23	104 2 30 23	104 2 30 23
105 2 40 23	105 2 40 23	105 2 40 23	105 2 40 23
106 2 50 23	106 2 50 23	106 2 50 23	106 2 50 23
107 3 0 23	107 3 0 23	107 3 0 23	107 3 0 23
108 3 10 23	108 3 10 23	108 3 10 23	108 3 10 23
109 3 20 23	109 3 20 23	109 3 20 23	109 3 20 23
110 3 30 23	110 3 30 23	110 3 30 23	110 3 30 23
111 3 40 23	111 3 40 23	111 3 40 23	111 3 40 23
112 3 50 23	112 3 50 23	112 3 50 23	112 3 50 23
113 4 0 23	113 4 0 23	113 4 0 23	113 4 0 23
114 4 10 23	114 4 10 23	114 4 10 23	114 4 10 23
115 4 20 23	115 4 20 23	115 4 20 23	115 4 20 23
116 4 30 23	116 4 30 23	116 4 30 23	116 4 30 23
117 4 40 23	117 4 40 23	117 4 40 23	117 4 40 23
118 4 50 23	118 4 50 23	118 4 50 23	118 4 50 23
119 5 0 23	119 5 0 23	119 5 0 23	119 5 0 23
120 5 10 23	120 5 10 23	120 5 10 23	120 5 10 23
121 5 20 23	121 5 20 23	121 5 20 23	121 5 20 23
122 5 30 23	122 5 30 23	122 5 30 23	122 5 30 23
123 5 40 23	123 5 40 23	123 5 40 23	123 5 40 23
124 5 50 23	124 5 50 23	124 5 50 23	124 5 50 23
125 6 0 23	125 6 0 23	125 6 0 23	125 6 0 23
126 6 10 23	126 6 10 23	126 6 10 23	126 6 10 23
127 6 20 23	127 6 20 23	127 6 20 23	127 6 20 23
128 6 30 23	128 6 30 23	128 6 30 23	128 6 30 23
129 6 40 23	129 6 40 23	129 6 40 23	129 6 40 23
130 6 50 23	130 6 50 23	130 6 50 23	130 6 50 23
131 7 0 23	131 7 0 23	131 7 0 23	131 7 0 23
132 7 10 23	132 7 10 23	132 7 10 23	132 7 10 23
133 7 20 23	133 7 20 23	133 7 20 23	133 7 20 23
134 7 30 23	134 7 30 23	134 7 30 23	134 7 30 23
135 7 40 23	135 7 40 23	135 7 40 23	135 7 40 23
136 7 50 23	136 7 50 23	136 7 50 23	136 7 50 23
137 8 0 23	137 8 0 23	137 8 0 23	137 8 0 23
138 8 10 23	138 8 10 23	138 8 10 23	138 8 10 23
139 8 20 23	139 8 20 23	139 8 20 23	139 8 20 23
140 8 30 23	140 8 30 23	140 8 30 23	140 8 30 23
141 8 40 23	141 8 40 23	141 8 40 23	141 8 40 23
142 8 50 23	142 8 50 23	142 8 50 23	142 8 50 23
143 9 0 23	143 9 0 23	143 9 0 23	143 9 0 23
144			

TABLE of the Mean Motion of the MOON, continued to Days, Hours, Minutes, and Seconds, constructed for Greenwich Observatory.

Mot. D.	Mot. D An.	Mo. S.	D.M. Mot. D.	Mot. D An.	Mo. S.
13 10 35	08 13 3 54	3 11	16 7 0 49 20	68 29 2 23	50 50
25 21 1	0 26 7 48	6 21	17 7 13 59 55	7 12 6 17	54 1
9 31 45	1 9 11 42	9 32	18 7 27 10 30	7 25 10 11	57 11
22 42 20	1 22 15 36	12 43	19 8 10 21 6	8 8 14 5	60 22
5 52 52	2 5 19 30	15 53	20 8 23 31 41	8 21 17 59	63 33
19 3 30	2 18 23 24	19 4	21 9 6 42 16	9 4 21 53	66 43
2 14 5	3 1 27 18	22 14	22 9 19 52 51	9 17 25 47	69 54
15 24 40	3 14 31 12	25 25	23 10 3 3 26	10 0 29 41	73 5
28 35 15	3 27 35 6	28 36	24 10 16 14 1	10 13 33 35	76 15
11 45 50	4 10 39 0	31 46	25 10 29 24 36	10 26 37 29	79 26
24 56 25	4 23 42 53	34 57	26 11 12 35 11	11 9 41 23	82 36
8 7 0	5 6 46 47	38 7	27 11 25 45 46	11 22 45 17	85 47
21 17 35	5 19 50 41	41 18	28 0 8 56 21	0 5 49 11	88 58
4 28 10	6 2 54 35	44 29	29 0 22 6 56	0 18 53 5	92 8
17 38 45	6 15 58 29	47 40	30 1 5 17 31	1 1 50 59	95 19
Take out for 1 D. less in Ja. & Fe.			31 1 13 28 6	1 15 0 53	98 30
0 1 0	0 1 0	1 0	H 0 1 0	0 1 0	1 0
1 1 0	1 1 0	1 1	M 1 1 0	1 1 0	1 1
2 1 0	2 1 0	2 1	S 2 1 0	2 1 0	2 1
3 1 0	3 1 0	3 1			
4 1 0	4 1 0	4 1			
5 1 0	5 1 0	5 1			
6 1 0	6 1 0	6 1			
7 1 0	7 1 0	7 1			
8 1 0	8 1 0	8 1			
9 1 0	9 1 0	9 1			
10 1 0	10 1 0	10 1			
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13 1 0	13 1 0	13 1			
14 1 0	14 1 0	14 1			
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23 1 0	23 1 0	23 1			
24 1 0	24 1 0	24 1			
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28 1 0	28 1 0	28 1			
29 1 0	29 1 0	29 1			
30 1 0	30 1 0	30 1			
31 1 0	31 1 0	31 1			
1 1 0	1 1 0	1 1			
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3 1 0	3 1 0	3 1			
4 1 0	4 1 0	4 1			
5 1 0	5 1 0	5 1			
6 1 0	6 1 0	6 1			
7 1 0	7 1 0	7 1			
8 1 0	8 1 0	8 1			
9 1 0	9 1 0	9 1			
10 1 0	10 1 0	10 1			
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13 1 0	13 1 0	13 1			
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27 1 0	27 1 0	27 1			
28 1 0	28 1 0	28 1			
29 1 0	29 1 0	29 1			
30 1 0	30 1 0	30 1			
31 1 0	31 1 0	31 1			
1 1 0	1 1 0	1 1			
2 1 0	2 1 0	2 1			
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25 1 0	25 1 0	25 1			
26 1 0	26 1 0	26 1			
27 1 0	27 1 0	27 1			
28 1 0	28 1 0	28 1			
29 1 0	29 1 0	29 1			
30 1 0	30 1 0	30 1			
31 1 0	31 1 0	31 1			

EXAMPLE of the Use of the *Astronomical TABLES*, in *Palaeastrum* 1757
of *Equation Tables* there, and *Lunar Equations Extraordinary* in *Pal.* 1758.

To find Δ 's true Place O. S. 1753; May 27^d 20^h 27^m 53^s Julian Style?

	Δ M. Pl.	Ap. Δ	$\odot$	$\odot$'s true Pl.	$\odot$'s M. Pl.
By Tabs.	0 29 13 38	7 6 56 42	8 0 38 20	2 17 23 28	11 8 29
10 less Eq.	— 0 54	0 29 13 38	— 3 40	p. 62. <i>Pal.</i> 1757.	
p. 71, 72.	0 29 12 44	5 22 16 50	8 0 34 40	0 29 13 38	
E. Δ Cen.	— 2 16 1	— 7 20	Doub. E. C	10 11 50 10	Δ $\odot$.
	0 26 56 33	5 22 9 56	Δ M. An.	8 23 40 20. 2.	Δ $\odot$ cord.
p. 73 Var.	— 38	— 0 54	10 less Eq.	— 1 48	doub. 10
Δ in Orb	0 20 18 30	5 22 8 42	Δ cor. An.	8 23 38 32. 2.	Δ $\odot$ cord.
Red. Eqn.	+ 6 20	Arg. for p. 71. XI. Eqn.	— 5 22 8 42.	Δ An. c	
Δ in Eccl.	0 26 24 5	computed.		3 1 29 50	Arg. Eve
	0 26 26	observed, <i>Halley</i> .		viz. 2. Δ $\odot$ cord. —	—
	— 1	Error of Computation.		same as Δ $\odot$ cord. +	

$\odot$ cord. p. 72. or Arg. of XII. Eqn. the Sum of which 11th and 12th Eqn. make the Eqn Δ 's Center.

The Arguments, and thence the Quantities of the several Equations are found to follow.

References.	P.	Eq.	Argum's.	+	—	References.	P.	Eq.	Argum's.	—
<i>Pal.</i> 1757	62	i	11 ^s 50 29'		4' 7"	<i>Pal.</i> 1757	71	xi	5 ^s 22 0 8'	0 55' 29"
1758	60	ii	7 10 19		3 2	0 55' 29"	72	xii	3 1 30	1 20 42
The <i>Palae</i>		iii	6 16 48		0 26	1 20 42	73	xiii	10 9 33	0 38
for 57, 58		iv	2 10 0	1 42		2 16 11	xiv	4 25 44		
and 1759	61	v	3 23 11	1 6						
should be		vi	8 2 9	0 48		Eq. Δ Cen				
bound to		vii	9 15 0	1 0		— 2 47 45	Rest of Equatns.		2 54 14	
for their		viii	2 15 49	1 27						
Use in	62	ix	4 5 8	0 47		<i>Pal.</i> 1757	74	ii	4 25 44	38 24
Computn.	x		6 13 40		0 9				3 22 6	+ 8 11

6 50 7 44 4 45 3' N Moon's Lat. 4 40 38

The 10 less Equations — 0 54
The 4 greater following — 2 47 45

Total Equations — 2 48 39

Δ 's Mean Place 05 29 13 38

Δ 's Place (as before) 0 26 24 59

Δ Eq. Eq. Points + 16

Δ 's correct Place Υ 26 25 15

Observed by *Halley* Υ 26 26 2

Halley's Error of Comp. — 8' 20", ours See Δ c4, *Halley*'s
— 47 Tables.

By a small Inattention we gave Δ Pl. P. 59. *Pal.* 1758, 0 26 23' 5",
of 2' 59" in the Computation, not in our Tables, which are very near,
Example appears, though not so accurate as those in our *Astronomia Accurata*.

The Arguments to the small Equations need not be taken nearer than to 5
Degrees, which will give the respective Equations to a Second of the Truth,
the Accuracy of Computation more than compensates for the No. of these

yet require less Trouble by this than by all former Methods, with fewer Equations. — So that the Difficulty of the Lunar Astronomy is now, in a great Measure, removed, by Ease and Simplicity taking Place, in determining the Requisites of the Orbit.

The Mean Places of the former Example being reduced to Morris's Mean Places (see before section bow) and then Mayer's lunar Equations applied, the Moon's true Place will not come out so near in this Instance, as by our Palladium Tables and Equations as above. — If Mr. Gael Morris, who may have seen Mayer's last Tables in Manuscript at the Observatory of Greenwich, should have constructed his private Tables by those Improvements, we here give them to the Public, as we found them in private printed sheets, with our own Improvements added, as in Pages 73, 74, 75, preceding: Being the *Astronomia Arcana* of Greenwich, or *Brokerian* Tables.

RECOMMENDATIONS of the PALLADIUM, 1758. Correct with the Pen.

For 1st, 2d, and 3d Yr, after } our Correspondt sending us 1st Yr's
Year, write 4th, 8th, & 12th aft. any Yr. } Equat. (as be called it) for what he
have called the 1st fourth Year's Equation after any Year.

we were led (in the haste of copying for the Press) to double and treble our Correspondent's Equation, called the 1st Year's Equation, as if designed for 1, 2, 3 Yrs. any Bissextile. Crops out (as needless) the 4th Equation or alter its Title of Leap-Year, for about 60 Years to each fourth Yr. adding, as in Pall. 1757.

Correct the 11. Example as follows.

For the Example (grounded on the foregoing Mistake) to agree with Truth,

For write	s	o	d	1	11	s	o	d	Ap.	1	11	s	o	d	1	11	Mean Time.
1764	o	29	13	38	7	6	56	42	8	o	38	20	by TaPal 1757				
1764	1	Æ.	—	4	7	+	7	20	—	3	40						
1772	o	29	9	31	7	7	4	2	8	o	34	40	⊙				
12th Yr aft.	+	3	13	9	less Equat.												
1772	o	29	12	44	M. Eq. Ct. d												
	—	55	29														
	o	28	17	15	Evecn. Æ.												
	—	1	20	42													
	o	26	56	33	Varn Equan												
	—	38	3														
	o	26	18	30	d in Orb.												
	+	6	29	Reductn. Æ.													
	o	26	24	59	d in Eclip.												

For Threats of
 1st, read, Threats of
 2. P. 47. in Tab.
 2. l. 1. read, 3'
 Col. 4. l. 3. read, 3'
 P. 56. l. 12. for o-
 read emits. P. 62.
 for 12 o, 11 o
 write down, write one
 other. P. 64. l.
 1. For Gibbons
 Gibbons. Agt No. 6.
 Page, r. 2. d a
 An. — d An. Agt
 12. + 1' 12"
 Maxima. The Ar-
 this Page are inva-
 but some of the
 are altered and in-
 in our Astron. ia

The Supplement re-
 ferred to here, in p. 57, and
 promised in p. 57, no Booksel-
 ler would undertake to print,
 when finished, to be delivered
 at Christmas as all the Ephe-
 merides had got the Start, and
 would not answer his Expen-
 ces, was urged as a general
 Reason against printing it, so
 that Labour was lost, and nobody injured but the Author;
 though he received several Complaints from Persons of sus-
 picious Principles, unacquainted with the Trouble, Ex-
 pence, and Nature of printing, as if they were injured by a
 Disappointment of their Expectation; though for what they
 never paid. And our Astronomia Accurata (now print-
 ed beyond 200 Pages, will be brought to Light as soon as
 completed, and delivered to Subscribers, for less than sold
 to other Buyers, whatever those of suspicious Principles may
 think to the contrary.

The Supplement referred to here, in p. 57, and promised in p. 57, no Bookseller would undertake to print, when finished, to be delivered at Christmas as all the Ephemerides had got the Start, and would not answer his Expenses, was urged as a general Reason against printing it, so that Labour was lost, and nobody injured but the Author; though he received several Complaints from Persons of suspicious Principles, unacquainted with the Trouble, Expence, and Nature of printing, as if they were injured by a Disappointment of their Expectation; though for what they never paid. And our *Astronomia Accurata* (now printed beyond 200 Pages, will be brought to Light as soon as completed, and delivered to Subscribers, for less than sold to other Buyers, whatever those of suspicious Principles may think to the contrary.

Whenever an Argument of Equation is transformed, the same Mean and correct Places, or Transformations, depending thereon, must be used.

as in the original Argument, that the same Signs, Degrees, &c. may be
result, which otherwise cannot.

The corrected Anom. and Place of J introduced in XI. and XII. Equ.
only the mean Anom. and Place J , corrected by the Sum of the 10 less Equ.
which is but a small Correction, yet not to be disregarded in taking out the
and Evection Equation of the J 's Center, which being of Correction, the
tion Equation must be taken out by the Evection Argument corrected, by
less Equations only, and not by them, and the XI. Equation, or mean
tion of J 's Center, preceding the Evection-Equation, as supposed in the
Bottom of the *Review of Arguments*, p. 64. The Equation of J 's Center
teing in the Correction of the Evection-Equation according to the *Method*
putation we have already explained.—*Pal.* 1759, p. 64. l. 10. for 366.366 r.

AD AUCTOREM PALLADII ANGLICANI.

Vir Accuratissime,

Spero *Astronomiam Accuratam Astronomis, et hujus et futuri Seculi gratiam*
quum in Lucem erit edita et Auctorem quoque eruditum, Præmia quantum ex dis
cepturum.—*Vale.*

Sum Tui Studiosissimus,

Dat. Burfordiæ 4to.

Kal Maias, 1758.

25 00 65 THOMAS HUNTLEIUS.

TO the *Subscribers* to the *ASTRONOMIA ACCURATA*.—Our *Astronomi*
rata, or *Royal Astronomer and Navigator*, determining the *Longitude*
and *Land*, from *Greenwich Observatory*, is printed as far as Page 225, of
28th Sheet, in *Quarto*, and only waits for *Precepts and Examples*, with a
cessary *Improvements*, to render the Work perfect, when it will be delivered
Subscribers, who do not consider the great *Attention, Trouble, and Time*,
to *methodise, write, print, correct*, and make such a *various Work* come
they would not be so *impatient* for its coming out, *before it can be perfected*.

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for his Use, and to whom, that due Notice, before the Work is quite gone
may be taken by him, of their Favours.—Those, who have not subscribed,
ing their Money beforehand, will be pleased to *observe*, that as the *Plan*
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will be *enlarged* also to the *Purchasers*, when the Book is published; wh
hope will be in a Month or two's Time from the Publication of this *Plan*
if the *Printer* (Mr. Kippax, in *Callum-street, Fenchurch-street, London*) sh
perform his Part, in that Time; as we are desirous he should, that we m
lige all our Friends and Correspondents.

Subscribers to our New Work, and the Contributors to this Palladium, are
to direct their Letters (franked or Post paid) for the *Palladium-Author*, to
Mr. Hallifax's, *Musical Clock-Maker, at the Fan and Dial, in Fleet-street,*
and at no other Place in Town; that being the most convenient (at present) for
ception of those Letters: Except what Letters (franked or Post paid) they are
send directly to the *Author*.

Mr. EMERSON's second Edition of his *MECHANICS* is lately published
Mr. Richardson, in *Pater-noster-Row, London*, being a Comprehension and Im
ment of all other Books upon those important and interesting Subjects.
may be also had the second Edition of Mr. Emerson's *Fluxions*, upon the
Subjects in *Nature*, (illustrating the Works of Sir Isaac Newton) and his *Trig*
and *Navigation*. Containing not only the Practice, but the Demonstration
Principles of all those Arts, as clear and certain as the *Propositions and Dem*
in *Euclid*. Since the Death of Sir Isaac Newton, this Nation is greatly ob
Mr. Emerson for his Improvements of Science.

Hæ Tibi erant Artes, Pacisque impendere Morem.
Parcere subjectis, & debellare Superbis.

Virg. Æn. 6. V. 353.

F I N I S.

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